Classified

RATES: Fifty words or less, one insertion, $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

OHIO MANUFACTURER has opening for young engineering college graduate with some practical experience in refrigeration field. Opportunity to assist in developing new line of commercial condensing units and learn production methods in a small but aggressive organization with well-equipped plant. Address Box 821, Electric Refrigeration News.

REFRIGERATION and air conditioning instructor to take full charge of resident and classroom work and grade correspondence school examination papers. Write fully giving age, present and past employment, education and salary expected. DR. B. M. KLEKNER, President, Refrigeration Engineering Institute, Warner Building, Youngstown, Ohio.

SALES ENGINEER to contact manufacturers, distributors, jobbers and installers of refrigerating and air conditioning equipment in New York, Philadelphia and New England wanted by midwestern manufacturer control devices; knowledge of refrigeration essential; opportunity for young college graduate; commission. State education, age, experience, income expected. Box 822, Electric Refrigeration News.

POSITIONS WANTED

AVAILABLE in New York City, a man now employed, experienced in organizing an air conditioning dealer or distributor, who now seeks similar connection. Age 36, married, engineer with 15 years' experience. Wide acquaintance with New York engineers and architects. Also willing to consider organizing to sell air conditioning products to trade. Give full particulars in first letter. Box 820, Electric Refrigeration News.

EQUIPMENT FOR SALE

FRIGIDAIRE plain-T two temperature valves $2.50. Mercoid No. 848 controls complete with tube $5.00. Try Warrenol for stuck-up compressors. Samples available. Thermostats, float valves, and expansion valves rebuilt. Prompt service. Same day shipment on refrigerant gases. HALECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

FOR SALE 9 Brunner refrigeration compressors, "V" type—Model R-5000—4 cylinder—3¼" bore and 2¼" stroke—less drive pulley. These compressors are practically new—used only for display purposes. Priced right for quick sale. Box 810, Electric Refrigeration News.

REPAIR SERVICE

SAVE MONEY on electric motor repairs. We rebuild and rewind thousands of motors yearly for largest refrigeration firms in the East and can save you money on your motor problems. Write for our price schedule for rewinding or rebuilding motors for refrigeration, oil burners, washing machines, motor stokers, and air condition motors. Out of town motors are picked up and delivered by our motor transportation service. Write for our dealers' price list. P. J. QUINN'S SONS, INC., 166 Vernon Ave., Long Island City, N. Y.

MAJESTIC UNITS; any model, rebuilt or exchanged $20.00 f.o.b. Chicago. Guarantee six months. All models in stock for prompt exchange. Wholesale only. REFRIGERATION PRODUCTS, INC., 122 W. Illinois St., Chicago, Ill.

MAJESTIC & GENERAL ELECTRIC units repaired. Our standard job on these units is $20.00, giving you a six months' guarantee. We also have our $30.00 deluxe job, giving you a two-year written guarantee. Please advise which job you want when sending your units. PENO SERVICE COMPANY, Ft. Smith, Arkansas.

REFRIGERATION CONTROLS, domestic types, repaired. 48 hours. Ranco pencil types $1.75, all box types, $2.00. Majestic $2.50. UNITED GAUGE AND INSTRUMENT COMPANY, 436 West 57th Street, New York City.

FRANCHISE WANTED

DESIGNER AND PATENTEE of air-conditioned and electrically-warmed bed suitable for use in home or hospital, and for use throughout the year, wishes to contact a reputable manufacturer, with a view to sale of patents on cash or royalty basis. Temperature and humidity may be automatically controlled winter and summer. Either ice or electric refrigeration. With ice at 40¢ per 100 lbs. and electricity at 2½¢ per k.w. hr., cost of continuous operation is less than 1¢ per hour, winter or summer. Four patents allowed, seven pending. Product has been developed during past five years. Very practical, and designed by engineer having knowledge of manufacturing processes and heat transfer. Full size unit may be seen, and full investigation is invited. Box 818, Electric Refrigeration News.

Leading Jobbers

Are now agents for Electric Refrigeration News and can supply current issues or take your subscription order. They also have copies of the Master Service Manual in stock for immediate delivery.

Questions

Quick Frozen Foods

No. 2866 (Service Man, New Jersey)—"Will you please send me the name and address of the concern that manufactures frozen fresh fruit and vegetables and also who makes their equipment to store these articles. I have several inquiries on these products and any information that you give me will be appreciated."

Answer: The concern which you probably have in mind is the Frosted Foods Sales Corp., 420 Park Ave., New York City, which is actively marketing Birdseye Frosted Foods throughout the East.

Practically all the leading manufacturers of refrigerated display case equipment have at one time or another manufactured equipment to display and store frozen foods, so you might contact the representative of any such manufacturer with whom you are familiar for information about such equipment.

We also understand that the Frosted Food Sales Corp. has a list of recommended makers of such equipment.

Sales to Florida

No. 2867 (Distributor, Florida)—"Can you furnish us with comparative figures covering Nema shipments of electric refrigerators to Florida for the first five months of 1935 and 1936?

"We need this information quite urgently and will certainly appreciate your cooperation."

Answer: Figures covering Nema shipments of electric refrigerators to Florida for the first five months of 1935 and 1936 are as follows:

	1935	1936
January	1,642	1,625
February	1,037	2,322
March	2,318	2,161
April	3,385	2,808
May	3,104	2,282

Combination Coolers

No. 2868 (Dealer, North Carolina)—"Kindly send us a complete list of all refrigerator manufacturers that are making a beverage cooler especially those who are making a combination beverage cooler and food cooler."

Answer: Manufacturers of beverage coolers are listed on pages 171 through 173 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

The following companies have introduced beverage coolers since Directory was published:

Pemco Manufacturing Co.
Bloomington, Ill.

Eagle Foundry Co.
Belleville, Ill.

Makers of Coin Meters

No. 2869 (Dealer, Quebec)—"Would you be kind enough to let us have the name or names of manufacturers of electrical coin-operating slots for refrigerators."

Answer: The following companies manufacture coin meters:

Bugetklok Co.
915 Washington Ave., S.
Minneapolis, Minn.

General Electric Co.
Industrial Dept., Schenectady, N. Y.

International Register Co.
15 S. Throop St., Chicago, Ill.

Monthly Production

No. 2870 (Dealer, Indiana) — "We thank you for copies received of ELECTRIC REFRIGERATION NEWS. It does not give the information we are looking for. Perhaps we should have been more explanatory.

"Can you advise where we could obtain monthly production figures of the different refrigerator companies? Yearly figures would even be acceptable."

Answer: We cannot give you monthly or yearly production figures for individual refrigerator manufacturers, as these manufacturers do not make their sales figures public.

Welding Rods

No. 2871 (Dealer, Indiana) — "In reading the July issue of ELECTRIC REFRIGERATION NEWS on page 15 I had my attention called to your reply to C. H. Earl Refrigeration Co., regarding welding rods use with Presto-O-Lite torches.

"You referred this to the Welding Metal Products Co., but did not give the address. Will you please give me their address as I have the same question and would like to make contact with the manufacturer of a similar brazing rod which would require a small amount of heat?

"Will you also include in your reply an address where I may obtain both re-conditioned cooling coils and condensing units, ⅓ hp. and ½ hp. (Sulphur dioxide) for commercial purposes?"

Answer: We have learned that the correct name and address of the company making the brazing rod is

Welding Metals Mfg. Co.
122 E. Larned St., Detroit, Mich.

We have no information concerning reconditioned commercial refrigeration equipment. Can any reader help us out on this question?

Patents on Cooler

No. 2872 (Dealer, Ohio)—"In one of your REFRIGERATION NEWS publications approximately six months ago, under the heading of 'Patents and Patents issued,' you had a description and patent numbers of the Larkin Dual Electric Refrigerated Beer Cooler. If I remember correctly there were 13 or 14 patents issued on this cooler.

"We would appreciate it if you could furnish us with all the patent numbers issued on this cooler also description of same."

Answer: A story describing the Larkin duel electric refrigerated beer cooler was published on page 1 of the March 6, 1935 issue of ELECTRIC REFRIGERATION NEWS.

Since we keep no index of patents, we cannot give you the patent numbers for this cooler. Perhaps you can obtain them from the United States Patent Office in Washington.

G-E Hermetic Service

No. 2873 (Distributor, Illinois)—"Where would you advise us to return an hermetically sealed General Electric unit to be overhauled?"

Answer: The most logical place to send a G-E unit is to the General Electric Co., but we presume you have some reason for wanting to secure service elsewhere. The following two companies have advertised recently in the classified column of ELECTRIC REFRIGERATION NEWS that they repair General Electric hermetically sealed units:

Refrigerator Engineering Parts & Service Co., 2800 South Parkway, Chicago, Ill.

Rex Refrigeration Service, Inc.
446-48 E. 79th St., Chicago, Ill.

Absorption Machines

No. 2874 (Reader, California) — "Would like to have the manufacturer's name that puts out the chemical apparatus for freezing water; I believe some call it the 'freezing ball'. It is used in the West here where electricity is not available, such as the mountains and deserts. There is some company that also puts it on motor camp trailers."

Answer: We believe that you have reference to the Icy-Ball absorption refrigerator which is manufactured by the Crosley Radio Corp., Arlington St., Cincinnati, Ohio. Other absorption refrigerators are manufactured by the following companies:

Allyne Refrigerator Corp.
c/o Cleveland Tractor Corp.
East 193rd St., Cleveland, Ohio

Electrolux Refrigerator Sales Div.
Servel, Inc.
Evansville, Ind.

Gibson Electric Refrigerator Corp.
Greenville, Mich.

Perfection Stove Co.
7609 Platt Ave., Cleveland, Ohio

Excise Tax

No. 2875 (Manufacturer, Wisconsin)—"As a manufacturer of refrigeration condensing units only, we are interested in whether or not we are subject to Excise Tax, and we have been referred to you as a party who could either inform us of our status in the matter, or could direct us to proper party where we might obtain this information.

"Attached please find our bulletin giving general information on the railway type of condensing unit. Our other bulletins give information on a commercial type condensing unit. You will note in both cases, we furnish only the condensing unit, and not the low side equipment. The unit is, therefore, applicable to either commercial refrigeration or air conditioning service."

Answer: We are quite sure that your equipment is not taxable. The text of this law was published in the June 22, 1932 issue and an interpretation of the law as it applies to refrigeration was published in June 29, 1932, issue of the NEWS.

For a final decision on your status, we suggest that you write to D. S. Bliss, Deputy Commissioner of the Bureau of International Revenue, located in the main office of the Bureau in Washington, who has made more recent interpretations of the tax.

Commercial Parts

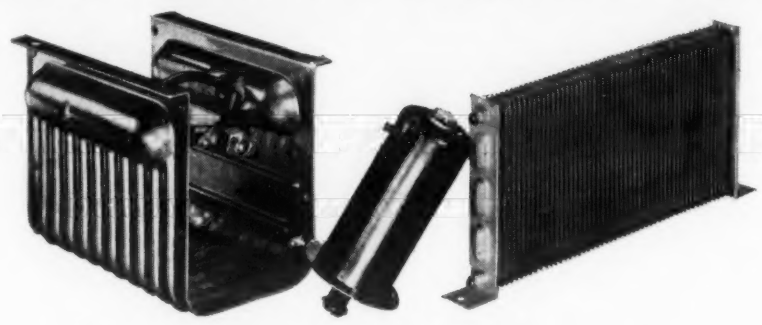
No. 2876 (Manufacturer, Pennsylvania)—"We are interested in securing a buyer's guide for commercial refrigerating parts, especially those applying to manufacturers of display cases and coolers. Can you inform us where we may secure such an item?"

Answer: Manufacturers of refrigerated display cases, commercial refrigerators, and commercial refrigerating machines are listed in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

The Buyer's Guide

Special rates apply to this column only. Write Advertising Dept. for full information.

SUPPLYING THE REFRIGERATION INDUSTRY



Evaporators, Receivers, Condensers, Compressor Domes, Compressors and Mechanical Parts. Also "Houdize," a perfected process for permanently uniting ferrous or non-ferrous metals.

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DIVISIONS OF HOUDAILLE-HERSHEY CORPORATION
General Executive Offices: Detroit, Mich.

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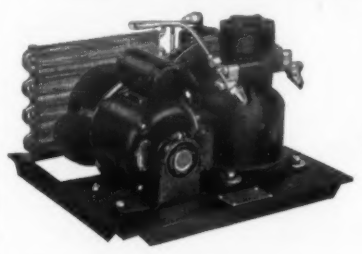
FOR
HOUSEHOLD REFRIGERATION
BY



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JOHNSON MOTOR CO.
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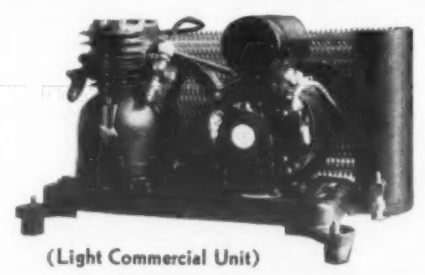

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All bearings diamond bored. Positive lubrication of piston by newly developed process plus forced feed lubrication in all models.
Sizes: 1/6, 1/5, 1/4, 1/3 h.p.
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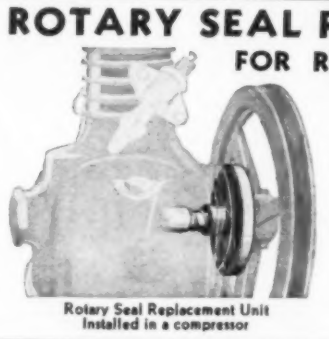
FOR REFRIGERATOR COMPRESSORS



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THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

Registered U. S. Patent Office

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THREE DOLLARS PER YEAR
TEN CENTS PER COPY

Oklahoma City '36 Air Cooling Sales $250,000

Clothing Stores and Dress Shops Set Pace as Installations Boom

OKLAHOMA CITY—Approximately $250,000 worth of air-conditioning equipment has been sold by Oklahoma City concerns during the current year, conservative estimates indicate.

Users have included many types of businesses, and have set the pace for clothing and apparel shops, shoe shops, department stores, restaurants and coffee shops, candy stores, barber shops, and physicians' offices.

Carrier Installations

Notable among Oklahoma City installations reported by the Oklahoma Electrical Supply company, handling Carrier conditioners, were: Kerr Dry Goods Co., third floor, where millinery, coat and fur coat, and gown departments and a girls college shop are located; a 30-ton job with an elaborate duct system having 47 outlets. Ten thousand c.f.m. of air is handled, two Weather Makers are provided on the air-conditioning floor and the compressor and an evaporative condenser have been placed in the basement.

Barth Clothing Store has a 13-ton job with the Weather Maker on the second floor and compressor and evaporative condenser in the basement.

Rothschild's B and M clothing store, for fitting rooms on the third floor, a three-ton job with a duct system.

Six Rooms in Dentist's Office

Dr. E. K. Mabry, dentist, six rooms: a three-ton system with compressor installed on the roof of the building.

Harry Katz, Inc., a three-ton installation for the fur coat salesroom; floor type units with compressor installed remote.

Herman's Grill, three dining rooms, 22-ton system; Taylor's Feminine Apparel, Inc., 10 tons; Thompson's Barber shop, located on the fourteenth floor of an office building, with a maximum capacity of 25 patrons—a five-ton job, using a suspended Weather Maker, a 5-hp. compressor on the floor, and a small duct system for supply and return air.

12 Residential Systems

In addition, the Oklahoma Electrical Supply Co. reported 12 residential jobs of from one to five rooms each.

Southwest Airtemp Corp., handling Chrysler, reported two separate installations in the Skirvin hotel of Oklahoma City, two offices, and a set-up in the barber shop.

The Tom Dolan Heating Co. installed a 25-hp. system for Allen's Shoe shop. Equipment installed included a Westinghouse condensing unit, a Buffalo Forge air conditioner, and an evaporative condenser.

The York office here recently completed an unusual installation in Mrs. Stover's Bungalow Chocolate shop, where 18,000 cubic feet of space are cooled by a 3¼-ton air-conditioning unit. A duct system, installed when the shop was opened less than a year ago, included grille openings so situated that the incoming air hit the candy counters first, thus doing away with the necessity of refrigerating the counters.

G-E Jobs Completed

McEldowney and Son, General Electric dealer, early in the year completed a central plant system for five offices, using direct expansion, factory built air conditioners with filters, for the Oklahoma Maytag Co. One hundred per cent fresh air is supplied; the system uses a straight line control, and is rated at 3½ tons.

A similar installation was made by this company for one and one half floors of the Hiram Paul Clothing Co.'s Number One store. This was provided with a 16-ton unit, and included an atmospheric spray cooling tower.

An outstanding residential job reported by the General Electric dealer was a year-round system with a 3½-ton refrigerating unit, so arranged as to supply air cooling for the first and second floors alternately, or partial cooling for both.

Kelvin Homes Are Being Erected by Utility Employes

CHICAGO — Completely air-conditioned homes are being built this summer by four employes of Commonwealth Edison Co., power company.

Designed according to plans prepared by Kelvinator Corp. in a nation-wide contest to promote the use of air conditioning in moderate priced homes, the houses include range and refrigerator, and lighting fixtures conforming to Illuminating Engineering Society standards.

The duct-type air-conditioning system, a compact cooling, heating, and conditioning plant, will be located in the basement of the homes.

Commonwealth Edison will install test instruments in the first three homes, to obtain additional data on the operating cost and efficiency of residential air conditioning. After the homes are completed, the public will be allowed to visit them, by appointment.

First of the homes, being erected by F. F. Sharp of the company's treasury-collection division, will be completed about Sept. 1. The others, being built by O. D. Westerberg of the architects service bureau, W. J. Niemann, engineering department, and E. A. Eul of the customers accounts department, will be ready for occupancy about Oct. 15.

297,435 Units Sold By Kelvinator in 10-Mo. Period

DETROIT—Shipments of Kelvinator refrigeration products for the 10-months fiscal period ended July 31 totaled 297,435 units, an increase of 33.8% over the 222,336 units shipped during the corresponding period last year, according to H. W. Burritt, vice president of the company in charge of sales.

July shipments of commercial refrigeration units totaled 4,261, a gain of 54% over the same month of last year.

Commercial shipments for the 10-months fiscal period ending July 31 were 35,168 units, as compared with 24,262 for the same period in 1935, an increase of 44.8%, reports Commercial Sales Manager J. A. Harlan.

Oil burner shipments for the 10 months exceeded by 75% the shipments for the entire previous fiscal year, according to E. V. Walsh, manager of Kelvinator's automatic heating division.

MacKnight Returns to Porcelain Institute

CHICAGO—George P. MacKnight has returned to the Porcelain Enamel Institute, as secretary, to succeed Kurt R. Groener, who has resigned. He will maintain his headquarters here.

Mr. MacKnight, who was associated with the Institute from 1931-1934, has been engaged in other association activities and publicity work for the last two years.

Retail Dealers In Birmingham Hit Warranties

Bureau Cites Difficulties Encountered with Long Term Guarantees

BIRMINGHAM, Ala.—A resolution calling manufacturers to come to agreement on a plan guaranteeing electric refrigerators for one year only was adopted by the Birmingham Electric Refrigeration Bureau at its most recent meeting.

Dealers reported at the meeting that the present plan guaranteeing refrigerators from one to 10 years is causing them considerable trouble, as customers expect them to service the boxes for the period of the guarantee, and particularly for the period during which they are making payment on the unit.

A letter has been sent by the Bureau to each manufacturer giving notice of the action taken and asking for a response. Ira F. Randall, secretary-manager of the bureau, said dealers found it difficult to control salesmen, some of whom promise service for an indefinite period in order to get a sale.

One dealer insisted that a year's guarantee is too long and that it should not run over 90 days, as is now extended on automobiles, but 12 months was finally agreed upon as prudent and reasonable.

Sparton Names New Distributors After Pullman Meetings

JACKSON, Mich.—Seven new distributors, six of whom will handle both the refrigerator and radio line for Sparton, were signed during the recent 30-day Sparton Pullman radio tour, reports Arthur T. Haugh, general sales manager of The Sparks-Withington Co.

Mr. Haugh, who was in personal charge of the trip across 21 states, in which more than 20 key cities were visited to show the 1937 line of Sparton radios, says the new distributors include the Honeyman Hardware Co., Portland, Ore.; Betram Motor Sales Co., Boise, Idaho; Williams Hardware Co., Amarillo, Texas, which will handle Sparton radios only; Thompson Hardware Co., Raton, N. Mex.; Sutcliffe Co., Louisville, Ky.; Smith Brothers Hardware Co., Columbus, and Seattle Radio Supply Co., Seattle, Wash.

Approximately 1,500 new dealers were signed during the trip and orders were received representing almost $1,000,000 of new business.

W. T. Sherer, President of Sherer-Gillett, Dies

BATTLE CREEK, Mich.—William T. Sherer, 53 years old, president of Sherer-Gillett Co., Marshall, Mich., and of Commercial Refrigerator Manufacturers' Association, died in a hospital here Sunday, Aug. 9, following an operation.

Schedule of Coming Issues of the News

NOTE: EACH OF THE FOLLOWING FEATURE ISSUES WILL HAVE EXTRA WORLD-WIDE CIRCULATION

Sep. 9—Tenth Anniversary Number

Oct. 7—Industry Pioneer Number

Nov. 4—Product Development Number

Dec. 2—Foreign Trade Number

Jan. 6—Air Conditioning Number

Nema Adopts Set of Water Cooling Standards

MANSFIELD, Ohio—Standards for drinking water temperatures which will be adhered to in water cooler installations were adopted last week by the Commercial Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association at the last divisional meeting here.

The standards covering drinking water requirements were proposed by the Applications Committee of the Commercial Refrigeration Section to provide a basis for estimating equipment, and to insure customer satisfaction. Considerable confusion, it was stated, had been caused among prospects by the statements of competitive salesmen.

Standards as adopted are published on page 8 of this issue.

Next meeting of the Nema Refrigeration Division will be held the week of Oct. 4 in Cincinnati, in conjunction with the regular meeting of the whole Nema group.

July Installations of 112 Cooling Systems Set Chicago Record

CHICAGO—Installations of air-conditioning equipment in Chicago during July totaled 112 jobs, an increase of 77% over the 63 jobs reported installed during June, according to figures compiled by Commonwealth Edison Co.

Leading the way in installations during the month were private offices, 41 of which installed air-conditioning systems during July, compared with 20 such installations during the month of June. Jobs ranged in size from 3 hp., in the Chicago offices of the Republican National Committee, to several of ½ and ¾-hp. capacity.

Residential air conditioning showed a nice total for the month, with 29 installations of this type being reported. One of the jobs, of ½-hp. size, went into the home of Phil K. Wrigley, owner of the Chicago Cubs, National League baseball champions in 1935.

While most of the installations were of this size, one of 3 tons capacity went into the residence of C. S. Walgreen, of the Walgreen drug store family. Another, of 2-hp. size, was installed in the rectory of Our Lady of Grace church.

General offices registered a neat increase in conditioning for the month, 16 such installations being reported against seven during June. Important in this class were an 80-ton system installed in Phoell Mfg. Co. offices; a 25-ton job in Chicago Screw Co., and a 20-ton job in Sonnenschien, Berkson Co. offices. Other jobs in this class ranged from ½ to 10-tons capacity.

Fourteen stores were air conditioned during the month, jobs including one of 25 tons in Howards Clothing Store; one of 15 tons in Grayson's Shops, Inc., dress shop, and three more of similar capacity in Blum's clothing store, Neisner's 5-and-10 cent store, and United Air Lines stores, Cicero.

Store conditioning totals for the month include three clothing stores, three candy shops, and an equal number of fur stores. One dress shop and a food store also were included.

Restaurant conditioning fell off a bit for the month, but four installations being reported. Largest of these was in the restaurant in the LaSalle Street Station, 139 West Van Buren St., and was for 30 tons.

Three drug store conditioning jobs were reported, largest being in the Hartman Drug Co. store at 505 North Michigan Ave., totaling 20 tons. Another, of 10 tons capacity, was installed in the Liggett Drug Store at 801 E. 63rd St.

Of the three industrial conditioning jobs installed during the month, two were in candy factories. An 85-ton system was installed in Curtis Candy Co. plant, 337 E. Illinois, and a 7½-ton system in the Nutrine Candy Co. plant at 419 West Erie.

Other jobs reported for July included three barber shops, a dentist's office, the nursery of Henrotin hospital and patients' room in Passavant hospital, two undertaking establishments, and the Hub theater. This last installation was for 50 tons.

40279 Units Are Sold in 6 Mos. In Philadelphia

Retail Sales Are Up 33% Over 1935 Period; Prices Lower

PHILADELPHIA—A total of 40,279 household electric refrigerators were sold in the first six months of this year in the Philadelphia metropolitan area, which was an increase of 33% over the 30,182 units sold in 1935, reports George R. Conover, managing director of the Electrical Association of Philadelphia.

The complete report giving comparative monthly sales, retail value, and average price, is published on page 2 of this issue.

Retail value of the refrigerators sold increased from $5,346,780 to $7,035,420, or 31%, in spite of the decline of the average price from $177 in the first six months of 1935 to $174 in the corresponding period this year.

The Philadelphia Electric Co., whose sales approximate 7.5% of the total, sold 3,058 units, or a 24% increase over the number sold in the same period last year. Just as its increase in sales did not equal the general record, so the retail value of utility sales was only 25% above its last year's figure, compared to the general 31% rise.

In contrast to the figures for the entire area, however, the average price of the refrigerators sold by Philadelphia Electric was $188, or $3 more than last year.

Greatest monthly increase recorded was in January, with a 252% gain being shown over January, 1935. Actual sales reached their peak in May when 9,911 units were sold.

The report covers sales in Philadelphia, Bucks, Montgomery, Delaware, and Chester counties; and includes the following makes: Apex, Coldspot, Crosley, Frigidaire, General Electric, Grunow, Hotpoint, Kelvinator, Leonard, Norge, Sparton, Stewart-Warner, Universal, and Westinghouse.

Kelvinator Appoints Nine Distributors

DETROIT—Appointment of nine new distributors of Kelvinator commercial refrigeration and air-conditioning equipment was announced last week by J. A. Harlan, commercial sales manager.

New distributors are: Gambill Co., Inc., Chicago, to handle room coolers; Nichols Brothers, Adrian, Mich., standard commercial line and liquid cooling; The Electric Supply Co., Corpus Christi, Tex., standard commercial, liquid cooling, and air-conditioning lines.

R. W. Barnes, San Antonio, Tex., air conditioning and automatic heating; Southern Equipment Co., San Antonio, beverage coolers; The New York State Electric & Gas Co., Binghampton, N. Y., standard commercial, liquid cooling, and air conditioning; F. H. Higgins, Ithaca, N. Y., standard commercial, liquid cooling, junior air conditioning, and room coolers; Newport Coal Co., Newport, R. I., automatic heating; A. H. Lumm Co., Toledo, air conditioning.

F-M Adds to Selling Organization in East

INDIANAPOLIS—Four new distributors have been added to the selling organization of Fairbanks, Morse & Co., reports W. Paul Jones, general manager of the F-M home appliance division.

The Olmsted Co., Syracuse, N. Y., headed by Howard Kaslin, will distribute F-M refrigerators and radios in central New York; C. Kurtzmann & Co. will handle distribution in Buffalo and in the surrounding New York and Pennsylvania territory; R. B. Wall Co. is new F-M distributor for Wilkes-Barre, Pa.

Farrar-Brown, Portland, will represent Fairbanks-Morse throughout Maine. H. H. Wimple will be in charge of the company's home appliance sales.

Auction Being Held On Equipment in Majestic Plant

CHICAGO—Final auction of $250,000 worth of plant equipment of the defunct Grigsby-Grunow Co., manufacturer of Majestic refrigerators, radios, and radio tubes, is being held on Tuesday, Wednesday, and Thursday of this week at the company's plant, 5801 Dickens Ave.

Under the terms of a U. S. Court order, the buildings must be vacated by Sept. 1 to make way for Zenith Radio Corp., which will occupy the plant space.

Refrigerator service parts valued at $183,000 including complete refrigerator units, compressors, motors, evaporators, condensers, switches, and cold controls, are among the items to be offered for sale.

Remaining equipment in all of the company's five plants will be auctioned. This includes, from the radio and refrigerator service plant, over 1,000 Majestic refrigerators, complete and incomplete parts assemblies, and individual parts; loading cranes, escalators, trolley conveyors, assembly rails, unit dollies, trucks, dehydrating ovens, refrigerator charging equipment, spray equipment, CO_2 compressors, storage tanks, welding equipment, calorimeters, vacuum and pressure gauges, dial indicators, and plant furniture.

Equipment to be disposed of from the refrigerator testing plant includes trolley conveyor and air hoists, switches, carriers, temperature and power consumption test units, pressure and vacuum test units, dehydrating ovens, Zerozone compressors, motor-driven blowers and air compressors, semi-finished assemblies and raw material stores.

Utility Conditions Its Display Room; Sales Go Up 33%

OMAHA — Refrigerator sales increased one-third in the 30 days following the installation of an air-conditioning system in the sales rooms of Nebraska Power Co., reports Mrs. B. E. Marsh, sales manager of the retail store.

"Visitors during the severe heat periods, finding the store comfortable, wander around looking at the merchandise and scrutinize it more carefully than usual," Mrs. Marsh declared. "Being comfortable, they are in a pleasant mood.

"As soon as a woman stops at a refrigerator on display, a salesman appears with two chairs, one for the prospect and one for himself," Mrs. Marsh said in relating the store's sales methods. "Such methods often result in the customer ordering before she leaves the store.

"Before we installed air conditioning," related the manager, "the customer, in a hurry to escape the inside heat, was not in the best of humors, and if approached by the salesman, gave him a curt nod and passed on."

C. I. T. Opens Offices in Canton, Ohio

CANTON, Ohio—New office of the C. I. T. Corp. was opened recently in the First National Bank Building, 120 Tuscarawas St. here. C. Vance Anderson and N. W. Pope of the Youngstown C. I. T. Corp. office will head the new branch.

The Canton office will serve the following counties in Ohio: Tuscarawas, Carroll, Holmes, and Stark. It is the tenth C. I. T. branch in Ohio.

Philadelphia Dealers Sell 40,279 Household Refrigerators in First 6 Months at Average Price of $174

Month	1936 Units Sold	1935 Units Sold	1934 Units Sold	1936 % Inc. or Decrease over 1935	1936 Retail Value	1935 Retail Value	1936 % Inc. or Decrease over 1935	1936 Average Price	1935 Average Price
January	2,532	718	1,069	+252%	$ 456,989	$ 137,558	+232%	$181	$191
February	3,657	2,634	1,329	+ 39%	681,667	488,499	+ 39%	186	185
March	7,668	6,357	3,363	+ 21%	1,349,089	1,115,435	+ 21%	176	175
April	9,870	6,652	8,290	+ 48%	1,718,797	1,176,956	+ 46%	174	177
May	9,911	7,885	8,754	+ 25%	1,719,936	1,390,673	+ 24%	173	176
June	6,641	5,936	6,738	+ 12%	1,108,942	1,037,659	+ 7%	167	175
Totals	40,279	30,182	29,543	+ 33%	$7,035,420	$5,346,780	+ 31%	$174	$177

3,058 Domestic Units Sold in 6 Months by Philadelphia Utility

Month	1936 Units Sold	1935 Units Sold	1934 Units Sold	1936 % Inc. or Decrease over 1935	1936 Retail Value	1935 Retail Value	1936 % Inc. or Decrease over 1935	1936 Average Price	1935 Average Price
January	81	53	117	+ 53%	$ 16,718	$ 10,923	+ 53%	$206	$206
February	160	104	103	+ 54%	29,623	18,383	+ 61%	185	176
March	372	302	231	+ 23%	70,191	57,386	+ 22%	188	190
April	810	566	726	+ 43%	152,348	105,182	+ 44%	188	186
May	867	719	795	+ 20%	163,008	130,465	+ 24%	188	181
June	768	715	589	+ 7%	143,474	134,389	+ 6%	186	188
Totals	3,058	2,459	2,561	+ 24%	$ 575,362	$ 456,728	+ 25%	$188	$185

Note: Utility sales approximate 7.5% of total sales. Report covers sales in Philadelphia, Bucks, Montgomery, Delaware, and Chester Counties. Report includes sales of the following makes: Apex, Coldspot, Crosley, Frigidaire, General Electric, Grunow, Hotpoint, Kelvinator, Leonard, Norge, Sparton, Stewart-Warner, Universal, and Westinghouse.

Two New Radios Added to Grunow Line; Distributors Celebrate Completion of Company's Reorganization

CHICAGO—A 12-tube radio incorporating "Teledial" tuning to retail for $99.95, and an 11-tube all-wave all-world set priced at $69.95 are two late additions to the Grunow line of radios for 1937. Announcement of the new models was made last week during the distributors' meeting in the Blackstone hotel, held in connection with a celebration of the formal reorganization of General Household Utilities Co.

Prominent in conducting the distributors' meeting was Walter Eckhardt, newly appointed director of sales for the company.

Announced at the same time was a "Teledial Super Twelve" model in a more expensive cabinet, to retail for $129.95.

All three radios are console models of walnut finish, and incorporate Grunow's "violin" construction, metal tubes, automatic antenna tuning, color flash dial, "electric eye," and clock-type tuning.

A comprehensive newspaper, farm paper, and national magazine advertising campaign will back up the company's bid for 1937 radio business.

Using the phrase "So simple a child can tune it perfectly" as its theme, the campaign will enlist the aid of Shirley Temple, child movie star, who will be featured in both magazine and newspaper copy as well as in a merchandising tie-up with theaters exhibiting her pictures throughout the country.

Media include 127 newspapers in 87 cities, farm papers with circulations totaling 12,000,000, full page ads in *Time, Saturday Evening Post, Collier's, Esquire, American Magazine,* and *Good Housekeeping.* Rotogravure and outdoor advertising also will be used.

Assisting Mr. Eckhardt in conducting the meeting were H. J. Shartle, general sales manager; Tod Reed, advertising manager; J. J. Davin, sales promotion manager; M. W. Kenney, chief engineer, and Lt. Comm. Fred Schnell, development engineer.

Wildermuth Salesmen Win Cuban Cruise for Knowing Sales Story

BROOKLYN, N. Y.—With 12 free trips to Havana, Cuba as a goal, dealers and salesmen working under E. A. Wildermuth, Kelvinator distributor here, participated in a Kelvinator "Learn and Earn" contest.

Object of the contest was to test the salesmen's knowledge and ability to tell the Kelvinator sales story. Rules did not require the men to sell a unit; to qualify, a salesman had to answer 10 questions based on Kelvinator refrigerators and their sales features.

Cruisers who sailed off on the six-day trip on the S. S. Oriente, which left July 18, were: Louis C. Baron, Vim Electric Co.; R. L. Bullard, Brooklyn Edison Co.; Philip Levin, G & R Furniture Co.; George Burt, Electrical Sales & Service Co., Inc.; W. E. Garland, Brooklyn Edison Co.; Paul Dennon, Westco Refrigeration Service Inc.; R. J. Delavan, Genung & Campbell Inc.; Sidney Kasindorf, Sachs Quality Furniture Inc.; Arthur Pollock, H. K. Mulford Co.; Samuel V. Robb, Perrin Engineering Co.; and William Sagarin, Brooklyn Edison Co.

Ray Hoefler, sales manager of the Wildermuth Co., escorted the winners on the six-day cruise.

Kelvinator executives who were judges in the contest included: George W. Mason, president; H. W. Burritt, vice president in charge of sales; Godfrey Strelinger, assistant vice president in charge of sales; V. J. McIntire, domestic sales manager; J. A. Harlan, commercial sales manager; Sam C. Mitchell, director of advertising and sales promotion; Walter Jeffrey, domestic advertising manager; W. E. Saylor, operations manager, sales promotion department.

THE MANUFACTURER OF A HOUSEHOLD REFRIGERATOR

Asked a Question

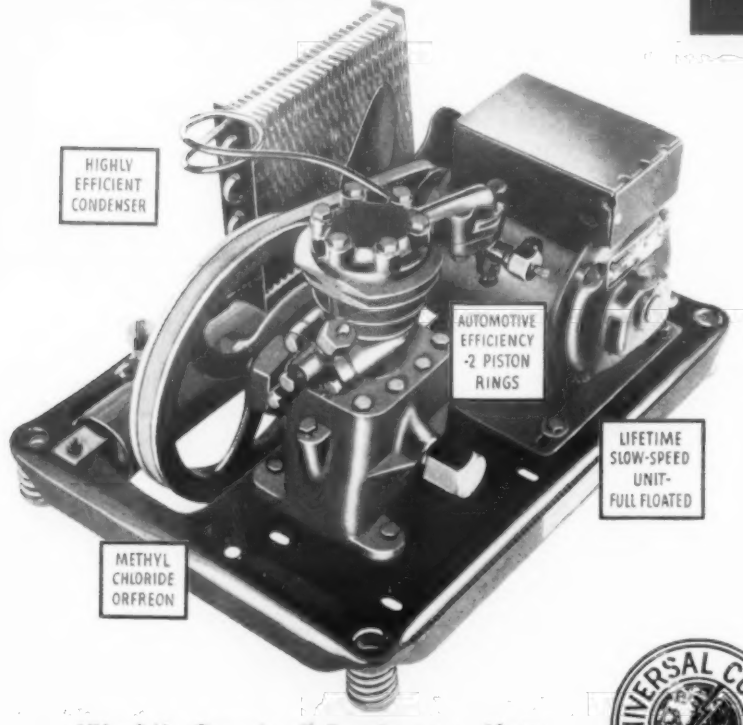
Said he, "Why should I buy compressors, condensing units or evaporators from you rather than build them myself?"

Said we, smoothing down his ruffled feathers with a soft answer, "Because, sir, we have a lot more experience, better facilities, greater buying power and a personnel to turn out better units than you could probably build in years of trying.

"And, because, sir, we can build these units, take a reasonable profit and still sell them to you at a saving.

"And further, sir, lest you think we're bragging, we can prove it to you." WE DID — — — — — — —

We can prove the same to you, too, whether you build 100 or 100,000 refrigerators.


HIGHLY EFFICIENT CONDENSER
AUTOMOTIVE EFFICIENCY -2 PISTON RINGS
LIFETIME SLOW-SPEED UNIT- FULL FLOATED
METHYL CHLORIDE ORFREON

Get the facts on this Moist Air Cooling provided ONLY with Universal Cooler evaporators . . . Something new, yet entirely proven . . . better results for your customers . . . stronger selling ammunition for your own men . . . and retail salesmen.

With your Household Refrigeration System "By Universal Cooler" you get the advantages of Greater Buying Power . . . Large Precision Production . . . and infinitely Greater Attention to Engineering Design and Development . . . Produced by the Largest and the Oldest company which can take care of your needs.

World's Standard Condensing Units — *Compressors and Evaporators*

UNIVERSAL COOLER

Refrigeration Specialists to the TRADE since 1922

DETROIT, MICHIGAN

and in Canada Brantford, Ont.

Two things make for lasting success: quality of product and aggressive selling.

You may have the latter—and you may have the former. But if the merit of your product is hidden by the unsightly appearance that soon results from a comparatively soft finish—you have a hard time convincing the buying public that quality was there even at the start.

DURABILITY PORCELAIN ENAMEL

PORCELAIN ENAMEL INSTITUTE, INC.
612 NORTH MICHIGAN AVENUE, CHICAGO

PORCELAIN ENAMEL

Evaporator-Within-an-Evaporator Construction Distinguishes New Norge 'Low-Temp' Refrigerator

DETROIT—A new type of Norge electric refrigerator, said to combine low temperatures and high humidity, has been introduced under the name of the Norge Low-Temp.

Two models of the Low-Temp line, with net food storage capacities of 6.02 and 8.08 cu. ft., were shown recently to the Norge distributive organization by John H. Knapp, vice president in charge of sales, in a coast-to-coast trip in which distributors and their staffs met at central points to inspect the units and discuss merchandising plans.

Increased insulation, a larger freezer area, and a system of two evaporators, one inside and completely insulated from the other, were necessary to produce the low-temperature high-humidity combination found in the Low-Temp, according to Norge engineers.

Insulation was increased to maintain lower established cabinet temperatures; evaporator area was increased to raise the average temperature of the evaporator surface and obtain higher relative humidity—since it was found that humidity was controlled by the difference between temperatures of evaporator and cabinet.

Power Temperature Differential

In the Low-Temp models, say Norge engineers, this temperature differential is kept at 14 to 17° as compared with about 25° which they say is maintained in the conventional mechanical refrigerator.

To combat the slower freezing time which higher evaporator temperatures ordinarily mean, a system of two evaporators has been worked out in the new Low-Temp line—one inside the other and completely insulated from it. The outer, or higher temperature unit cools the cabinet, while the inner unit provides fast freezing, it is claimed. The inside evaporator is sealed to prevent currents of extremely cold air inside the cabinet.

Compressor Changed Slightly

A single compressor unit supplies each of the two evaporators with the refrigerant necessary for its proper operation at its particular temperature. Although some changes have been introduced, much of the regular Rollator equipment is used in the new unit, according to Norge engineers.

After the new unit had been developed the company placed several models privately throughout the country among cooperating owners who were asked to observe performance under conditions and climatic variations that exist in national distribution.

In addition to this observation under actual kitchen conditions, the company retained two laboratories to make performance experiments: Electrical Testing Laboratory, New York City; and Robison Laboratory, New York City and Detroit.

Laboratory Tests

The laboratories were asked to make comparative tests to determine the points of relative superiority of ice refrigerators, standard mechanical units, and Low-Temp models. In conducting the test, declare Norge officials, the laboratories established three comparative zones:

(1) The zone of prime freshness, within which the mineral elements, vitamin content, and nutritional value of each perishable remained unimpaired; (2) The zone of edibility, within which each food, though not of prime freshness, remained in a condition fit to eat; (3) Zone of spoilage.

Averaging all foods in the experiments, the Low-Temp refrigerator kept foods in the zone of prime freshness longer than standard models, it is claimed.

Results of these comparative tests are given in a booklet just issued by Norge, titled "Again Norge Sets the Pace." The booklet contains blueprints listing technical results of the tests in relation to moisture retention in days, bacteriological count, and the keeping time in the zone of prime freshness of Low-Temp, compared to ice refrigeration and standard electric refrigeration, in control experiments with 18 perishable foods.

In all, laboratory tests were conducted on 29 perishable foods, including canned milk, oysters, coffee cream, chicken soup, round steak, cooked and raw asparagus, peas, fruit salad, custard, cottage cheese, liver, lamb chops, pork chops, boiled ham, celery covered and uncovered, mashed potatoes covered and uncovered, and other perishables.

A table giving results of all the tests is included in the book.

Of the two Low-Temp models being introduced at present, the smallest, a unit of 6.02-cu. ft. net food storage capacity, is available with either lacquer or porcelain cabinet exterior. Largest model, with 8.08-cu. ft. storage capacity, is available in porcelain exterior only.

Key specifications and equipment of the Low-Temp units are:

Model No.	LTL 62-6	LTP 62-6	LTP 86-6
Height (in.)	59¼	59¼	64¼
Width (in.)	31½	31½	35
Depth (in.)	26½	26½	26½
Food storage (net) cu. ft.	6.02	6.02	8.08
No. shelves	4	4	4
Shelf area, sq. ft...	11.93	11.93	14.82
Ice cube trays	3	3	4
No. ice cubes	96	96	120
Lbs. of ice	9¾	9¾	12½
Exterior finish	‡	†	†
Interior finish	†	†	†

‡Norgloss. †Porcelain.

All cabinets are finished in white, with black bases. Standard accessories on all models include electric light, defrosting tray, hydrovoir, adjustable shelf, bottle and dairy rack, sliding utility basket, and ice tray release.

Grunow Appoints New Baltimore Distributor

BALTIMORE — Peoples Electrical Supply Co., Inc. has been appointed exclusive distributor for Grunow electric refrigerators and radios and the Samson line of electrical appliances in the Maryland territory.

To build up its refrigeration activities, the firm has set up a separate refrigeration and appliance division, and plans later to house this division in a separate building adjoining the present one. The building is now being remodeled.

Malcolm Stewart has been appointed general sales manager. Mr. Stewart formerly was connected with the Majestic refrigerator distributor here, and later with the RCA-Victor radio and Grunow refrigeration distributor.

Oscar Levitt, formerly manager of Baltimore operations for Shapiro Distributors, Inc., Grunow distributor, is new sales representative for Peoples Electrical Supply Co. in the Baltimore area. The company also has made Allan Burns, former service manager of Shapiro's Baltimore distributorship, head of its refrigeration and radio service departments.

C. I. T. Makes Profit Of $9,757,387 in Six-Months Period

NEW YORK CITY—Commercial Investment Trust Corp. reports net earnings of $9,757,387 for the six months ending June 30, as compared to $7,256,517 for the corresponding period last year.

Volume of both business and earnings reached new high records for any half-year period in the company's history, officials declared.

After dividends on the outstanding preference stocks, there remained available for dividends on the common stock $8,964,819, equivalent to $3.16 per share on 2,836,923 shares outstanding in the hands of the public at June 30, 1936, after giving effect to distribution of a 20% stock dividend on May 28.

This compares with $6,891,188, equivalent to $2.93 per share on 2,353,292 shares outstanding with the public on June 30, 1935.

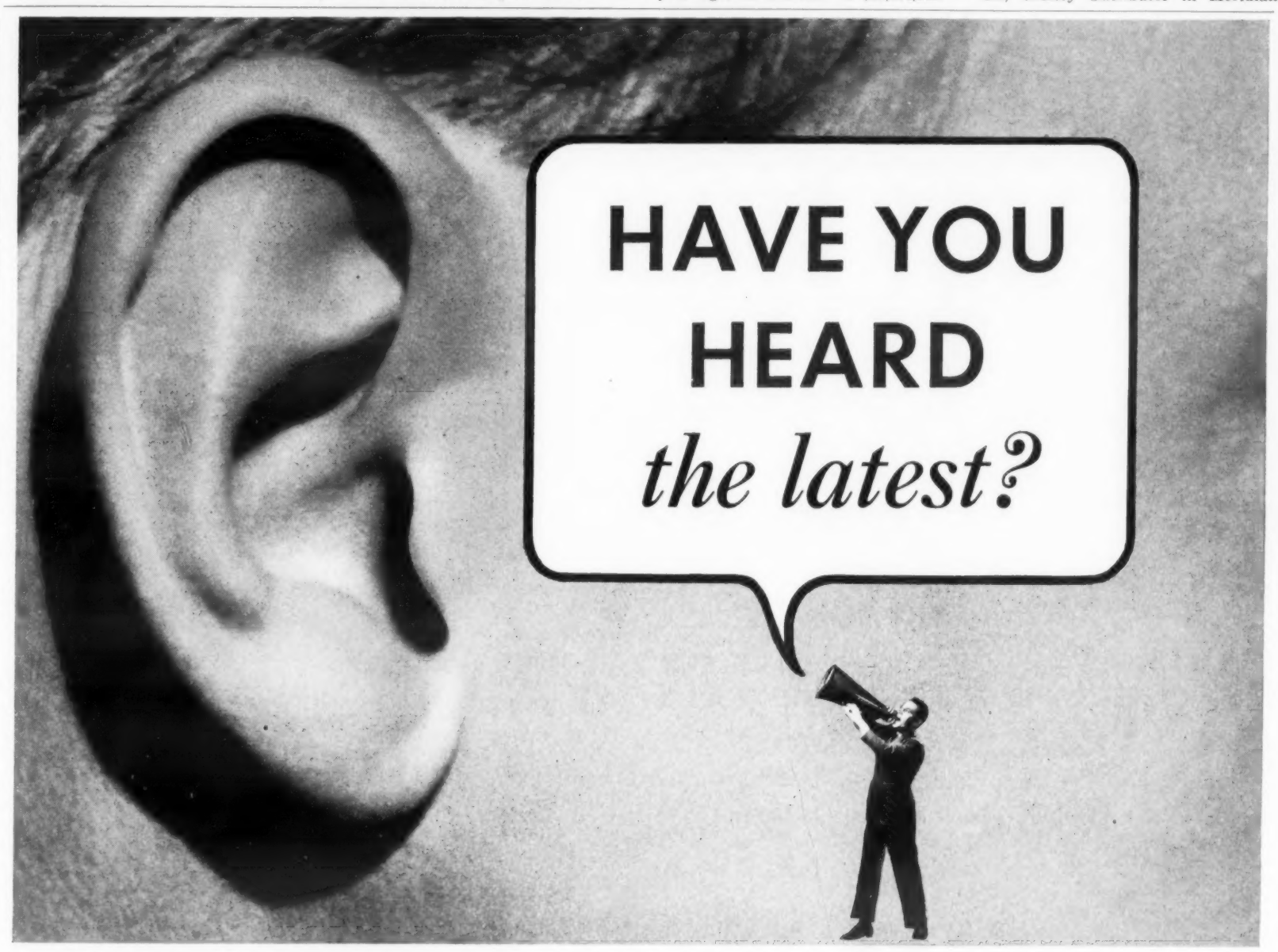
Total outstanding receivables of $359,780,678 at the end of June, compared with $270,376,537 outstanding a year ago, an increase of $89,404,141.

Compared with a year ago, all divisions showed gains in both the six months' volume and outstanding totals at the end of June, with the exception of wholesale automobile notes and acceptances. The decline in latter, the corporation explains, was owing to the fact that a considerable part of the wholesale automobile financing applicable to the early part of the 1936 selling season was handled in the last two months of 1935, when that industry advanced the showing of new models to November.

The consolidated balance sheet of the corporation and subsidiaries as of June 30, 1936 shows total assets of $409,587,591 as opposed to the $297,183,889 at the end of 1935.

Crosley Dealer Gets Many Prospects at Show

LAUREL, Miss.—Participating in the electric show staged by the Mississippi Power Co. here, Carriere Furniture Co., local Crosley dealer, has secured a large number of new prospect names for appliance sales through its display of refrigerators, radios, and electric washers and ironers, reports I. Z. McClean, representative for the Milton-Brooks Co., Crosley distributor in Meridian.



Du Pont **DULUX** *is on more than 2,000,000 household refrigerators.*

Make use of this new finish for Economical Production and Profitable Sales!

THE latest news is getting around rapidly. Du Pont DULUX, the modern type finish for refrigerators, has established itself as a real selling force. Refrigerator manufacturers and dealers have proved its sales appeal.

DULUX is another achievement by du Pont chemists, who have produced so many products to make for better living today.

Here are the major qualities that make DULUX so important as a finish for refrigerators:

It is a supremely beautiful finish. DULUX is made to keep its color, its gloss and its pure whiteness.

It is formulated and designed to offer exceptional resistance to all the things that usually harm finishes.

Its smooth, hard surface offers no place for dirt or dust to cling. It stays cleaner.

The original appearance of DULUX remains fresh and clean despite the touch of household oils, greases and acids.

DULUX has such extraordinary flexibility and adhesion that it does not chip or break or crack easily under blows.

DULUX has an unusually dense, impermeable film that protects against corrosion.

Sell Refrigerators finished with Du Pont DULUX. Take advantage of the du Pont name—its reputation as a guarantee of high quality wherever it is attached to a product. Use DULUX finish as a sales-clincher to turn hard-to-sell prospects into customers.

Send today for the complete story of DULUX for Refrigerators. Write for a booklet that describes in detail the advantages of DULUX finish. Get your copy and keep it handy for selling use. It contains powerful sales help. Ask for more than one copy if you can use them profitably. Address E. I. Du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware.

DU PONT REG. U. S. PAT. OFF. **DULUX** REG. U. S. PAT. OFF.

for refrigerators

DU PONT ON THE AIR—*Listen to "The Cavalcade of America" every Wednesday, 8 p. m., E. D. S. T., over C. B. S.*

Around the World

With George F. Taubeneck

Note: This is the thirty-second article in the "Around the World" series written by Editor Taubeneck since the beginning of his trip Jan. 8, 1936. Mr. Taubeneck has completed his seven-months' journey (as reported in the last issue of the NEWS) but his reports on major refrigeration markets abroad will be continued for several weeks.

This week's instalment tells more about Egypt, while next week's issue will give much interesting information about Palestine.

Sun Helmet Myth

Most travelers remember Port Said as a place where they had a rollicking good binge in an hour and a half, and as a place where they put on—or threw away—that pith sun helmet.

Port Said bears the same relation to the helmet that Sept. 1 does to the American straw hat. When a northbound passenger through the Suez Canal reaches Port Said, he is supposed to throw away his sun helmet. Likewise, to the voyager entering the canal from the Mediterranean, Port Said marks the point at which it is no longer considered safe to venture out into the sun without a pith helmet.

We think it's high time somebody exploded the sun helmet myth and, to quote Popeye of the comic strip: "I'm the guy that can do it."

Whoever the manufacturers of solar topees, or sun helmets, may be, promotters from every land should take off whatever hats they may wear to them. As a promotion job, the creation of the Sun Helmet Myth ranks with the job done by the Austrian manufacturers who made the fez (they call it a "tarboosh" in Egypt) the official headgear of Mohammedans in all lands.

First of all, they sold it to explorers, and that lent it romance. Most of us associate the sun helmet with Frank Buck, jungles, tigers, pythons, and all the lure of the glamorous tropics. As soon as the traveler puts on a sun helmet, he begins to invest himself with courageous battles against wild animals in the verdant underbrush of a tropical thicket. If you don't believe that, notice the subtle change of facial expression on your fellow travelers, the new carriage to their shoulders, the new swing to their stride the first day they don this magic hat.

Next, they established it as the mark of the white man, the *pukka sahib*, the superior being amongst the millions of obeisant coolies and salaaming dark-skinned races. The Egyptians and Arabs have their fez, the Hindus their turban, the Malays their conical straw. But to the conquering and ruling white man—and Haile Selassie—is reserved the sun helmet. It is an invincible badge of caste.

Most important of all is the widely credited supposition—and superstition—that the solar topee is mankind's only protection against sunstroke in the heat and glare of the tropics.

Like most superstitions, it makes those who believe in it fanatical. They become wildly angry when they see you without one. They beg, they insist, they shout. If you keel over in a heap, struck down by the angry gods who have decreed that mankind wear this mark of supplication, don't blame them. They warned you.

Now the writer happens to be a sunlover, and a believer in the efficacy of violet rays. Maybe that's just as silly as the belief in the devil-chasing charm of the solar topee. Moreover, on a bet with the San Francisco General Electric distributor, I had set out to go around the world without a hat. No sense to that either, undoubtedly.

But I refused to be bullied. Steamship bulletin boards, hotel signs, fellow travelers, and local residents all went unheeded. I crossed the equator twice, spent days bareheaded in the heat of the sun in Northern Australia, along the Great Barrier Reef, in Papua, through the heart of Java, in Singapore and Johore, in sweltering Burma. I crossed the parched Indian plains in the hottest season. And all bareheaded.

What's more, I *sought* the sun, because I wanted the violet rays and a good coat of tan (most of which was lost in rainy, cold Europe.) On boats I spent most of the daylight hours in the sun—reading, writing, swimming, and just sunbathing. And what happened? Nothing. Not even a headache.

Lest readers simply conclude that I'm just a bonehead who happens to be impervious to sunstroke, it should be recorded that conversations with English and Scotch officers stationed in India—whom I met on shipboard during the Bombay-Port Said run—confirmed the notion that the makers of pith helmets had simply created a myth.

Maybe going bareheaded in the tropics is not the best idea in the world, but hats and headgear other than the solar topee can be worn with perfect safety.

* * *

Annette of Port Said

As for Port Said's gaiety, that's something which is turned on and off—like an electrical light—with the arrival and departure of every passenger boat.

Normally Port Said is a sleepy, peaceful, dreamy little city wither citizens of Cairo and Alexandria go to take a rest.

But when a big ship comes in: Ah! Wake up! Turn on the neons! Strike up the band! Bring on the dancers! Polish up the glasses! Display the souvenirs! Cry out your wares! The fleet's in!

Port Said has none of the dubious gaiety or underworld thrills of a sailor's haven like Marseilles or Barcelona. Ships stop for but a few hours and the sailors are too busy loading and unloading to come ashore for relaxation.

But for through-the-canal passengers from either direction, it provides a welcome break in the voyage, and a chance to stretch their legs ashore.

The harbor is the heart of the city, and a boat frequently appears—from the center of the town—to be anchored right at the end of the street. Actually, disembarking is much more fun than walking down a gangplank directly to shore. The trip is generally made via a rocking, serpentine bridge of planks laid over small boats.

At night when a ship comes to port, the wharfside is aflame with arc lights, floodlamps, and neon signs. There is a whopping big bazaar where one may buy "genuine" (usually made in Japan) Eastern curios and Egyptian handicraft, as well as toilet articles and travelers' supplies. And there are the cafes and cabarets.

The cafes are of the sidewalk variety, where you eat thick chunks of bread and sip the molasses—thick Egyptian coffee from thimble-sized cups, whilst a tiny boy in a fez makes passes at shining your shoes, and obnoxiously persistent hawkers bedevil you to purchase cigarettes, candy, trinkets, rugs, tarbooshes, aphrodisiacs, and lascivious postcards.

Even if the traveler hasn't started out to drink, the sidewalk hawkers generally drive him to it. And that leads us to Annette of Port Said, an international institution.

Annette presides over the bar appended to the cabaret of the Eastern Exchange Hotel. (The Casino Palace has a cabaret during some months of the year, and there are a few smaller "hot spots," but most people get no further than the big, bright Eastern.)

A handsome, Junoesque blonde whose age is as uncertain as her origin, Annette is more than six feet tall, and weighs close to 190 pounds. She does her own bouncing if, as, and when the drinkers become drunks.

Aside from her skill in handling the customers, she is a linguistic marvel. "How many languages she knows I can't tell you; but a brother of J. E. Benghiat (Frigidaire Egyptian salesmanager) who lives in Port Said and took me to watch Annette in action, told me that he had tabulated English, French, Arabic, German, Spanish, Portuguese, Greek, Russian, Dutch, and Hebrew.

While we were there, she carried on simultaneous, rapid-fire conversations with Benghiat in Arabic, Frigidaire Mediterranean Salesmanager Copeland in French and Spanish, me in English, a Viennese cabaret dancer in German, and the Maharajah of Jaipur in Hindustani. Changing tongue quickly and without batting a mascarad eyelash, she parried and thrust, soothed and admonished, wisecracked, and quoted poetry. And kept the glasses filled, and the National Cash Register ringing.

If your time is limited, and you have to choose between the Sphinx and Annette, by all means see Annette. She seems as big as the Sphinx, is surely as wise, twice as sculpturesquely handsome—and she talks!

* * *

Commercially Speaking

Northern entrance to the Suez Canal, the key to the East, Port Said has a population of around 110,000. Outside of a handful of Italians, Frenchmen, Greeks, and Armenians, plus an occasional Englishman, the population is Egyptian.

From October to March the weather is hot. From April to June it is quite warm; from July to September, exceedingly hot. It rains only during the "winter" months.

Port Said connects by rail with Cairo, Alexandria, Luxor, and Suez; and through Kantara, with Jaffa, Tel-Aviv, Haifa, and Jerusalem. Aerially it connects with Cairo, Alexandria, Luxor, Jerusalem, Haifa, Athens, and Marseilles.

It's as a harbor, though, that it's important. If you'll take the figures on tonnage passing through the Suez Canal, you'll have traffic figures for Port Said, for all boats going either way through the canal stop there.

The harbor itself is protected by two strong breakwater walls, one 6,000 yards long, the other 2,200. Storms send waves rolling over these protecting arms, and it's a fine, generous sight indeed. Commanding the harbor are an heroic statue of the canal's conceptor, Ferdinand de Lesseps, and a million-candlepower lighthouse which winks at departing voyagers long after the land and de Lesseps have sunk into the sea.

Developed specifically for canal control purposes, Port Said has no history, no Meccas for tourist pilgrimages and is as regularly laid out as a checkerboard.

It is located on the eastern end of the island which protects quiet Lake Manzalah from the frequently raging Mediterranean.

* * *

On Parle Francais

From Port Said it is 4½ hours by train to Cairo—a hot, dusty trip, but a fascinating one. For a time the journey is alongside the canal; then it veers inward through the fertile Nile delta, passing centuries-old villages of mud huts, and whistling over stretches of cotton and grain fields.

Later, under the chaperonage of Cairo friends, I was to have a more intimate inspection of this Promised Land, and to get glimpses of the manner in which the people live.

Cairo itself is not Egypt, except on the scraggly outskirts, where the natives live in ancient ruins of homes which have the appearance of a city that has been bombarded; all the roofs appear to be blown off.

International and cosmopolitan, Cairo has the warm, pulsing heartbeat of an Oriental metropolis. Sections of it could be Singapore, or Bombay. The admixture of races, however, falls into two classes: tarbooshed Egyptian, and European. The latter group consists, in the main, of Greeks, Italians, Portuguese and Frenchmen. It was a surprise to find that the language of Egyptian cities is French. Somehow I had thought that it would be English, inasmuch as the latter nationality exercises a behind-the-scenes suzerainity over Egyptian affairs.

But the English are not in Egypt for commercial reasons. They leave that to the French. England finds Egypt important *strategically;* for the Suez Canal is still the indispensable link between England and its Eastern Empire.

From a military standpoint, England treats Egypt as a colony. It barracks a portion of its army there, and during the Italo-Ethiopian conflict, the harbor of Suez, Port Said, and Alexandria were bristling with destroyers, cruisers, and battleships.

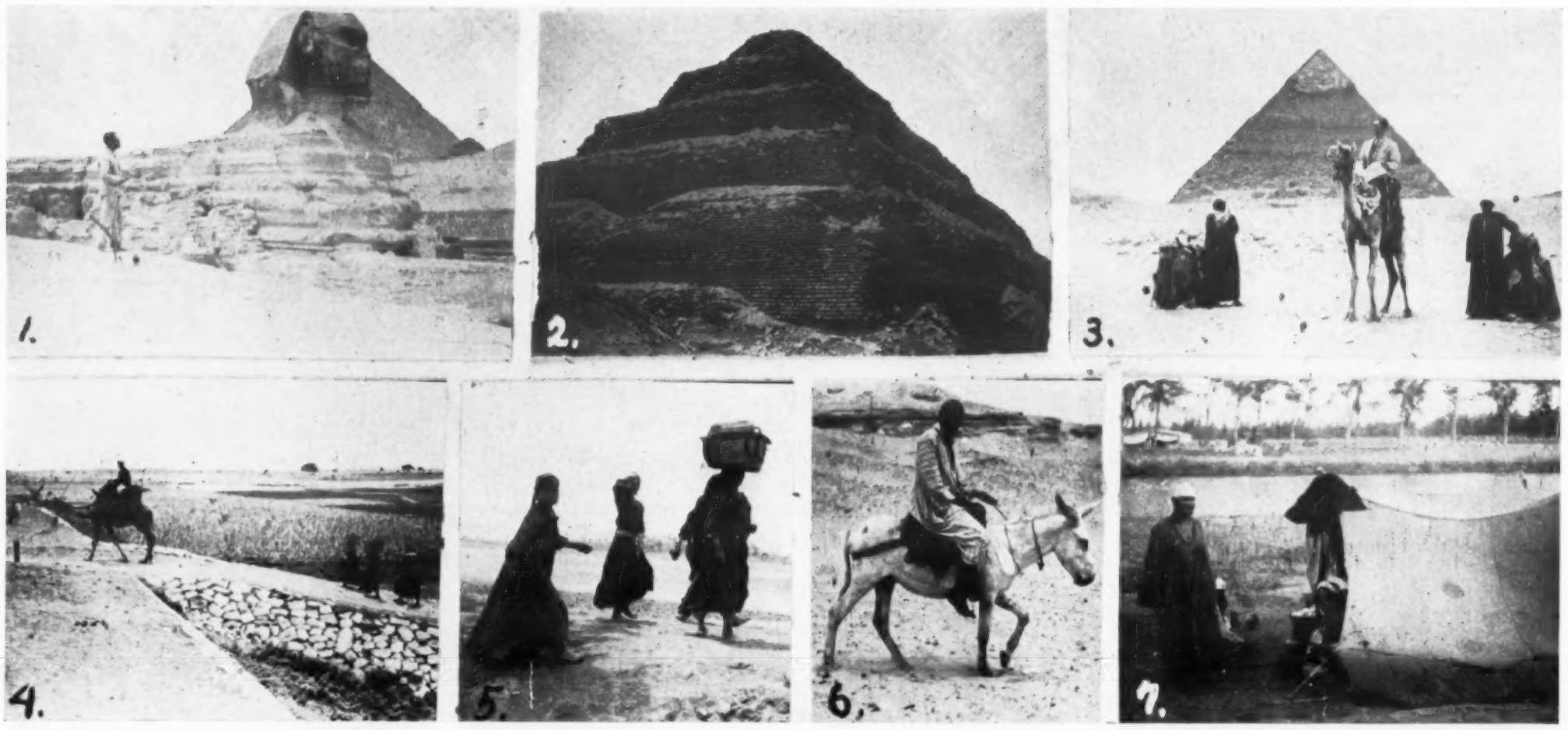
Until Mussolini began to do something about his dreams of Caesarhood, a large portion of the Egyptians resented this presumptive attitude of Great Britain. They knew that King Fuad listened to the advice whispered into his ear by messengers from Downing Street, and that young Farouk (the present king) was being educated in England.

They didn't like that either. University students raised so much ruckus over the question of Egyptian independence that it finally became necessary for representatives of the British and Egyptian governments to start sweating over a treaty which would define the exact relationship between the two. Their deliberations were in progress during my stay in Cairo.

But Mussolini changed all that. Egyptians quickly decided that they would rather have British paternalism than Italian dictatorship. And when Fuad died, fear began to eat at their hearts. When the boy king Farouk came from England, he was escorted up the streets of Cairo in a solemn, hushed processional which reminded me strongly of Washington, D. C. on March 4, 1933, when Roosevelt II took the oath of office at a moment

(Continued on Page 5, Column 1)

Parts of Egypt Have Changed but Little Since the Time of the Pharaohs



(1) Editor George Taubeneck gives close scrutiny to the Great Sphinx. The Great Pyramid is in the background. (2) A tribute to Egyptian architecture. This age-old step Pyramid of Sakkara seems good for centuries more, despite its deterioration. (3) Astride a camel in the Egyptian desert, the Great Pyramid in the background. (4) An Egyptian highway, suited for camel and pedestrian traffic. (5) Egyptian peasant girls. (6) Many natives use donkeys for transportation. (7) Arabs, advocates and practitioners of the simple life.

Around the World

With George F. Taubeneck

(*Continued from Page 4, Column 5*)

when the nation's financial institutions were closing their doors to avert total disaster.

The Egyptian man in the street fears the coming of Italy into Mediterranean Africa. Many of them believe that Egypt will be the next conquest for Marshal Badoglio, Duke of Addis Ababa. Even enlightened business men point out that the present concentration of Italian troops in northern Africa could make quick work of the much smaller British forces—which have been thinned out further by troubles in neighboring Palestine.

Even so, the dominant and highly nationalistic Wafdist party is still clamoring for "independence," with the reservation that the British army and navy will come a-running when Mussolini wearies of civilizing the Ethopian wastes, and decides to add another chunk of Africa to the New Roman Empire.

* * *

Mosqued Marvel

No matter what the political destinies of Egypt, there is a portion of Cairo which will undoubtedly persist, oblivious to outside strife. This is the Cairo of mosques and the tarboosh, the coffee shop and the sidewalk vendor.

These latter I have mentioned before. They sell anything they can carry, for whatever price they can get. It may be a pyramidal stack of red, tasseled tarbooshes, or it may be flavored water, or one of King Tut's bicuspids. One step up the commercial scale is the merchant who has a stall opening upon the sidewalk, from which he sells totally unsanitary foods, or rugs, or whatnot.

Through narrow, oh, so narrow streets wends a jostling multitude of native Egyptians, grunting in gutteral Arabic, gesturing, calling, moving, moving, always moving. Whither? It doesn't seem to matter. Some ride on skeleton wagons drawn at turtle's pace by comical donkeys or fly-swarmed oxen. An occasional camel undulates into view.

Multitudes more are taking their ease in the sidewalk cafes. A few sip coffee, some puff away at the "hookah" (the water pipe, which filters tobacco smoke through a water-filled bowl and up a long, flexible stem; it is handed from customer to customer, and nobody bothers to wipe off the mouthpiece). Most of them, however, are talking. Conversation seems to be the national pastime.

Towering over the "musky" are the many-hued spires and domes and minarets of Cairo, the city of splendid mosques. Of all the religions, Islam has provided us with the richest architecture.

* * *

African Metropolis

Thick-lipped, flat-nosed negroid types pass in front of your eyes often enough in Cairo to remind you that this is the metropolis of Africa, the biggest city on the Dark Continent, as well as the capital of Egypt.

On an African locale, Cairo is a city of Oriental inhabitants, ruled by Europeans, with roots deep into the histories of the world's oldest civilizations.

The city itself is a composite of four different settlements: (1) ancient Babylon, dating back to the time of Ramses and the pyramids, centuries before Christ; (2) Old Cairo, founded by Caliph Omar in the seventh century A.D.; (3) New Cairo, established 300 years later by the Moslem general Gohar; and (4) Heliopolis, a highly modern and entirely beautiful European city established by a Belgian syndicate in 1900.

Old Cairo is the city of mosques and the "musky." New Cairo is quite French, with luxurious hotels (Shepheard's is world-famous) broad boulevards, *chic* girls and sleek women, modern shops, small squares, and stately trees.

Heliopolis (City of the Sun) is like Tel-Aviv—something new under the Oriental Sun. Its 25,000 inhabitants live in a healthful, crisp atmosphere on a plateau some 150 feet higher than Old and New Cairo. They live, moreover, in a uniform-but-ever-varied city of modified Moorish architecture.

The magnificent Palace Hotel of Heliopolis, open but one month a year, seemed more like a palace to me than did any *real* royal palace in Europe. Beautifully conceived and carefully planned, Heliopolis is without doubt one of the most beautiful residential cities in the world. Driving through its quiet, wide streets, under a full moon with my friend Mr. Benghiat, it seemed like *the* ideal place to live, providing one had the opportunity and the money to reside anywhere one might choose.

Sun and sky in Cairo are equal to those of the Riviera. In truth Cairo is a popular winter resort, especially with the English. And nights, with the romantic river Nile to reflect the stars and the moon and the lights of the hotels, are heavenly, too.

Cairo is a more beautiful city than either of its cosmopolitan rivals, Singapore or Bombay. And in addition to the shoulder-rubbing of the Oriental and the Occidental, Cairo offers the juxtaposition of luxurious modernity upon luxurious antiquity. There is a *richness* and a majesty in the relics of Cairo's past which have no equal.

* * *

Camels to Buick

Cairo is a city of superlatives. Its relics of antiquity are the oldest and most impressive; its modern commercial and residential sections are the newest and finest; its climate in winter is the easiest among the Eastern cities, while its climate in summer is probably the least endurable.

Above all, its contrasts are the *sharpest*. No complicated series of gradations in social classes exist in Cairo, as in Singapore or Bombay; the people are either well-to-do or poor, well-bathed or dusty, ambitious or unstirred—in the timeless, patient, slow-moving waiting-out-of-days which is the heritage of the East.

On the same wide streets Buicks sail past camel caravans. In Bombay the occasional fine cars find their progress held in check by small, cheap cars, by bicycles, by ox carts, by thousands of plodding humans. In Singapore the right-of-way is cluttered up by tiny English cars, by motorcycles and motorcycle trucks, and by coolie-drawn rickshaws. Not so in Cairo. The Buicks go as swiftly and smoothly as their drivers like; camels and donkeys keeping well to one side, and only in the musky do the pedestrians crowd the streets. The latter, of course, are also littered with pigeons, goats, and sheep, which handle the "white wing" and garbage removal business for that ancient sector.

The Egyptians are among the few Eastern races who seem to understand that water is useful as a beverage. They drink gallons of it, buying different grades (just as we have different gradations of milk) according to their means.

From the flashily arrayed "cherbooty" they buy water which is flavored and *ice-cooled*, dispensed in glasses, and served from brass-bound glass bottles. Cheaper beverages are sold by vendors carrying earthenware jugs, sometimes on their heads, sometimes on their backs. To fill the drinking cup of the purchaser (who generally carries his own receptacle), the vendor simply stoops over, and the water runs out of a short spout into the cup. Lowest in the scale is the boy or old man who carries his water-for-sale in a goatskin, with punctured legs of the skin acting as a spout, in the manner of a teat.

If you notice a concentration of flies—which abound in Egypt like rats in India, giving flyless Singapore a distinct edge on Cairo as a place to visit—that will be the pastry and sweetmeat merchant. Underneath the fly swarms are delicacies which form a staple article of diet for the Egyptian, but concerning which few white people, for obvious reasons, have any knowledge.

One exception to this last statement is the sweet known as "Turkish Delight," said to be a great favorite with tourists. It might be noted, however, that P & O ships do not permit passengers to bring "Turkish Delight" aboard, for fear of releasing a scourge of ants.

For much the same reason that one finds scores of head-turning pretty girls on the noisier streets of New York (say, around Madison Square Garden), there are flocks of naturally pretty girls in Cairo. Both groups come from the same part of the world, Mediterranean Europe (Spain, Italy, Greece, · Jugo-Slavia,) where they breed flashing dark types, of regular features and oversize eyes.

As to the Egyptian women, you simply can't tell. According to Moslem custom, they are veiled and cloaked from nose to heel in dark muslins which reveal about as much as a nun's costume. Yellow metal braces fit across their faces underneath the eyes, which are the only exposed features.

The idea, one Mohammedan told me, is that should an irresponsible rake take a notion to abduct a woman in the street, he wouldn't know whether he was carrying off a virgin or a grandmother. So he generally desists, and instead goes over to a high bench under a canopy in a coffee house, and smokes hashish, or opium blended with Turkish tobacco, from a hookah.

Homes in Heliopolis, as I mentioned, are uniformly of a distinctive Moorish design. In New Cairo there are a mixture of styles, showing the influence of many nationalities and culture. Especially interesting, in this

(*Continued on Page 6, Column 1*)

Glimpses of Local 'Color' in Cairo

(1) George Taubeneck tries out a hookah, a water pipe which filters tobacco smoke up through a water-filled bowl, and is handed from smoker to smoker. (2) Egyptian students stage a parade to welcome the boy sovereign, King Farouk, home from England to take over the throne upon the death of King Fuad.

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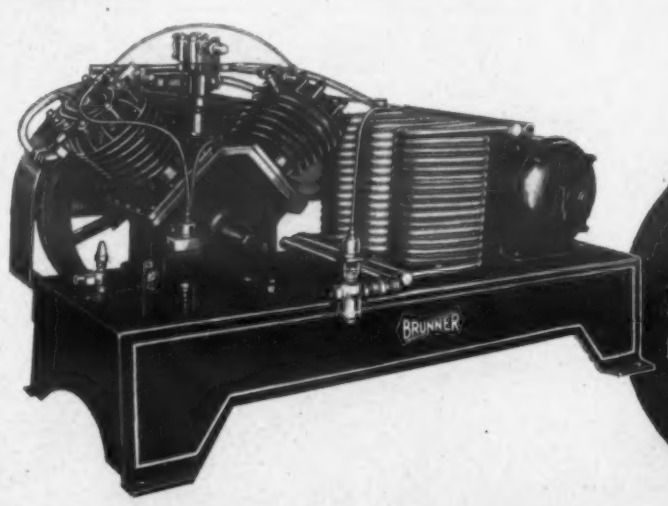

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Around the World

With George F. Taubeneck

(*Continued from page 5, Column 5*)

connection, are the homes of the various diplomatic legations, each of which attempts to recreate and reproduce, in architecture and landscaping, a corner from their homelands.

Lining the winding streets of Old Cairo are high-ceilinged structures of limestone and cemented stones, painted in colors which once must been gay. Windows are high, and protected by iron grillwork. Upper stories frequently project over the street, offering relief from sun and rain (according to the season) to pedestrians. The general scheme is thus the direct opposite of New York's set-back school of architecture.

Latticed balconies on some of the older buildings are used for refrigeration purposes, as well as to allow the occupants an observation point screened from defiling reciprocal stares of the rabble below.

Most of these buildings have small courtyards. The walls are very thick, the high ceilings heavily beamed, and they are so substantial that they will no doubt endure for as many more decades and even centuries as have already flitted through them. That is, unless some Egyptian Tugwell comes along with a slum clearance scheme.

America, which has so much land at its disposal, seems to be the only nation in the world which *replaces* buildings. Foreign cities let old buildings stand. New construction is erected on land previously bare, which gives rise to that phenomenon (to an American) of "new" and "old" cities, so well exemplified in Cairo and Jerusalem, in Delhi and Budapest. In America a city changes aspect with the years. In the old countries, they simply move over and establish a new city.

To the antiquarian, to the student of history and architecture, the custom is undeniably praiseworthy. To see how life was in a given past period, one simply steps across the street into the "city" of that time.

* * *

The Mosques

Next to the Sphinx and the Pyramids, which are just outside the city (patience, faithful reader; we're almost there), Cairo offers its many-hued mosques for the visual edification of the traveler.

There are more than 500 of them (I didn't count 'em, but that seems to be the number the inhabitants agree upon), and therein hangs a tale.

Just as building a temple has been considered a good *investment* in India and Burma, so it is in Cairo. The wealthy Buddhists of Rangoon build pagodas to atone for their earthly sins, and to insure felicity in the next life. Hindus of means build temples because their "cut" of the "take" is better than an American annuity as a regular income provider for old age. In Cairo, building a mosque is simply "the thing to do," just as a wealthy Long Islander buys a yacht, a Philadelphia millionaire endows a college quadrangle, or a Western tycoon puts up a hospital.

In olden days the Moslem rulers believed in the New Deal principle of confiscation. No "malefactor of great wealth" could feel safe in leaving the fruits of his toil and ingenuity to his family. A mosque, however, was sacred; he could spend his money on the erection or beautification of such with impunity.

Frankly, the vaunted and vaulted cathedrals of Europe cannot compare with the mosques of Cairo. Cathedrals are gloomy and forbidding; they are products of a rainy, cloudy climate. (One finds, to prove our case, no famous cathedrals along the sunny Riviera). The mosques of Cairo were put up by people whose lives were spent in the brightest of sunshine; they are colored and tinted to reflect that sunshine, and they lend brightness and gaiety to a city which was "civilized" when Europe was a land of grim savage tribes.

In Europe things are venerated because they are old, whether they have beauty or not. The Roman ruins, for example, are simply ruins. But the architecture of Egypt is so much older, *and so much more beautiful* than that of Europe, that the pretensions of the latter to place and pomp become thin in comparison. What's more, antiquity is so synonymous with beauty in the Cairo scene that one seldom thinks of the great age of objects he gazes upon. It all has a oneness with the general scene, with the climate, and with the people; and the reverence it commands is *uplifting* and *brightening*, rather than solemn and depressing.

If one must analyze, the distinctive features of the mosque are the dome, the minarets, and the arched entrances. The dome indicates that the mosque is a tomb (generally of the rich man who built it). The minarets, towering spires of grace and delicacy, are the leading contribution of the Moslem designers to world architecture. Archways are recessed, and richly ornamented in brass and bronze. With a true sense of the theatrical, the designers "built up to the entrance," literally. Terraces and flights of stone steps lead the pilgrims up to the doorways. In Cairo, many of these staircases are richly carpeted.

Shoes must be removed before stepping across the low barrier at the entrance. Inside are pillars, pillared cloisters, and lofty arched vaults—from which the builders of Christian cathedrals must have drawn heavily for their ideas of interior design.

The floors are frequently inlaid with marble and porcelain, teak and ivory, in elaborate and sensual patterns.

Outside the mosque are bazaars where one can buy really exquisite Oriental rugs, and hammered copper and brassware. Copper vessels are generally sold by weight, and the Egyptians are wont to invest their savings in them, for copper articles are readily negotiable, as well as being intrinsically useful, and they fluctuate but little in value. The worth of a desert Moslem may be tallied by the number of his camels; of the city dweller, in terms of copper goods.

Finest of the mosques are clustered atop the Citadel, and are neighbors with the impressive Fatimite Walls of Cairo, which were completed in the eleventh century A.D., and behind which Scotch soldiers in plaids and kilts are barracked today. Napoleon once used this fortification.

One gate in these Walls (known as Babel-Mutawali) is the Ganges of Egypt; the crippled and the ailing come wailing here in hopes of being cured. To help out their supplications they rub affected parts on the gate. Science has discovered no therapeutic qualities to the gate commensurable with the odd prophylactic action of the water of the Ganges.

Mosque of el-Azhar, one of the oldest, is the headquarters of the University of Islam. It was built originally by Gowhar the Sicilian, a Christian who become a Mohammedan convert. Many emirs and sultans have since added to the original mosque.

Students of this university number more than 12,000 and come from India, China, Turkey, Morocco, and many Arab lands. They receive free tuition, free bread, and a bit of spending money. *Memorizing* is the time-honored method of learning here. Arabic is the language employed. Studies include Moslem law and traditions, plus modern science, and the complete course requires 12 years of study. Matriculation is realized, after character recommendations are attained, upon passing an examination which embraces, in addition to elementary education, a memorization of the Koran from beginning to end.

One of the relics of this mosque is a reputed fragment from Noah's Ark.

Among the better of the mosques are the group known as the tombs of the Khalifs, the Red Mosque, the Blue Mosque, the brick Mosque of Ihn Tulun, the elegant Bordeini, the majestic Mosque of Hassan (another college occupies this notable specimen of Saracen art), and the showy Alabaster Mosque of Mohammed Ali, which is on the Citadel.

Near the magnificent Mohammed Ali is the old Roman aqueduct; also the very deep, sturdy masoned Joseph's Well. From afar one can see the Nile, the Pyramids, and the Sphinx; it is a spot for contemplation and reverie at sunset.

Daytime Scenes in Modern Cairo

(1) Classiest drinking water in Cairo is bought from the flashily-arrayed "cherbooty." It is ice-cooled, flavored, and served in glasses. Lowest classes drink from goat-skin pouches. (2) Egyptian women are cloaked and veiled from nose to heel—you can't tell them apart. (3) Conversation is the national pastime. (4) The sidewalk vendor—a part of Cairo's life that will never vanish.

Forbidden Photo

Although photography is forbidden, the editor managed to snap this picture of a relic from King Tut's tomb in the Cairo Museum.

Grave Is the Goal

"Life is real, life is earnest
And the grave is not its goal.
'Dust thou art, to dust returneth'
Was not spoken of the soul."

These schoolroom-hallowed lines of Longfellow's would have been considered a lot of eye-wash by the ancient Egyptians who built the pyramids. The only way an individual could achieve perpetuity, in their notion, was a physical way.

So: (1) They preserved the bodies of the dead in a manner which no other race has been able to equal for impermeability. (2) They buried a man's choicest possessions with him. (3) They decorated his tomb, so that he could enjoy the contemplation of art during his enforced inactivity. (4) They placed food and drink beside the corpse. (5) They built the finest and biggest monuments they could afford, so that their *names* might be perpetuated.

Builders of the pyramids spent a lifetime directing the job. Emphatically, in their case, the Grave *was* the Goal. The Great Pyramid of Cheops, for instance, took 20 years to build, with several hundred thousand men laboring at it in regular shifts all that time.

The desert sands just outside Cairo are an immense burial ground of most ancient Egyptian royalty and noblemen. Best known, of course, are the biggest—the triad known as the Pyramids of Gizeh. These are close together, and very near Cairo. You can, in fact, get out there by tram ("street car" to Americans).

Cairo friends, however, generously offered one of the inevitable Buicks; and in it I roamed the desert plateau, finding just about enough pyramids to last me a lifetime. Also I found several lesser Sphinxes, including a really neat small one in alabaster.

Of these secondary tombs only the crumbling Step Pyramid of Sakkara, which is said to be the grandaddy of the lot, was particularly interesting. This one must have been relatively easy to build, for it consisted simply of terraced layers, and was rather squat.

Without doubt the three Pyramids of Gizeh are something to see. By moonlight they would inspire awe and mystic reverie in a United States Marine. By day they would impress even an American civil engineer. As engineering feats, especially when you consider that they were erected largely by brute force, they rank with the wonders of all time.

Begun in 3733 B.C., the Great Pyramid of Cheops was originally 481 feet high, with sides each 764 feet long, my ancient history textbook states. Originally, too, it had smooth polished sides. However, the thrifty Moslems carted away all this smooth stone, and used it for building mosques.

Second largest pyramid, finished by Chepron about a century before Cheops started out to put his predecessor's tomb in the shade, still has a capping of smooth stone left by the vandals.

One of the sad features of religion in the past has been the jealousy of preceding faiths. In Java and in Siam we have the spectacle of the mighty temples of Borobodur and Angkor being buried by Moslem priests. In India for centuries it was a game for priests to tear down temples erected with loving care by those of superseded sects. (How fortunate that the Taj Mahal escaped!) And while we admire profoundly the mosques of Cairo, we could feel more grateful to their builders if they had shown a little more industry and imported their own stone, instead of defacing the pyramids.

Seen closely, the pyramids are just ugly piles of terraced limestone. In my younger days I likely would have tried to climb one, for the succeeding terraces are spaced about five feet apart, and ascent is possible. But it's quite a climb from the road to the base of Cheop's massive tomb, and I was content to trudge through the sand (it was a very hot day) over to the Sphinx, which lies just behind the trio of pyramids.

* * *

Riddled Sphinx

Just what the Great Sphinx is supposed to represent, when it was sculptured, who put it up, and why, are questions which puzzled even the classic Greeks.

It is said to be the oldest known example of the handiwork of man. And to this day nothing has been sculptured to compare with the benign, quizzical expression of that human-headed stone lion. For uncopiable expression, it ranks with Mona Lisa's smile.

Mythology tells us that the famous Riddle of the Sphinx was the one running like this:

Riddle: What is it that walks first on four legs, then on two, and finally on three?

Answer: Man. As a child he crawls on all fours; as an adult, he walks upright on his two legs; as an old man, he adds a cane for support.

According to the ancient belief, the Sphinx was an oracle which answered all the questions which puzzled mankind in the Long Ago. Periodically, he asked this riddle, and for centuries no one could answer it. At last, a foreigner paid a call to the Sphinx, heard the riddle, and answered it correctly. Outraged with jealousy at this discernment on the part of a mere mortal, the Sphinx closed his mouth in a silence that endures to this day. As a result, mankind flounders into increasing difficulties, for the Sphinx is no longer handy to give wise counsel on perplexing problems. (This myth is retold entirely from memory, and may be a bit fuzzy as to details. But after all, who is learned enough to correct a myth? It's my story, I like it, and I'll stick to it.)

Picture postcards of the Sphinx and the colored plates of geography and history books show it resting in sand. It surely was more picturesque that way.

Today it stands in a pit which archeologists have dug, exposing its rather unprepossessing and out-of-repair foundations.

Close inspection also reveals that the Sphinx has been in a war, and it's face is badly scarred. Mohammed Ali, he who built the big mosque over in Cairo, bombarded it into its present deplorable condition. Perhaps he was tired of hearing about the Riddle of the Sphinx, and riddled it with bullets.

* * *

Empty Tombs

It is possible to go inside most of the pyramids, but you won't find much there. Vandals and jealous priests have carted away all the treasures which once were stored within the catacombed chambers of the interiors.

Inside these great tombs are rooms which archeologists tell us were burial rooms, assembly rooms, temples of worship, decoy rooms, and passageways designed to lead future grave robbers astray, and even ventilating shafts. There are also tombs of royal relatives.

All of the known tombs of this mammoth burial ground have not been rifled. Every so often an archeologist discovers a new one. After a time he succeeds in opening it (the tight, marvelously joined masonry of these ancient builders is as unequalled as their embalmed mummies), and eventually the contents are turned over to the Cairo Museum.

* * *

Thrilling Museum

Ordinarily, a remark that you had just spent a thrilling afternoon in a museum would be good for a laugh any time, in this age of speed and excitement.

But I defy you to go into the Museum at Cairo, and emerge without getting not one, but many thrills. Remember King Tut (Tut-Ankh-Amen)? Well, a whole world was excited when his tomb was opened back in 1922. Today what the hapless discoverers (most of them died mysteriously, bearing out the Egyptian belief that the Tut-Ankh-Amen laid a curse on all who should desecrate his tomb) found in that famous front-paged exhumation is on display in the Cairo Museum.

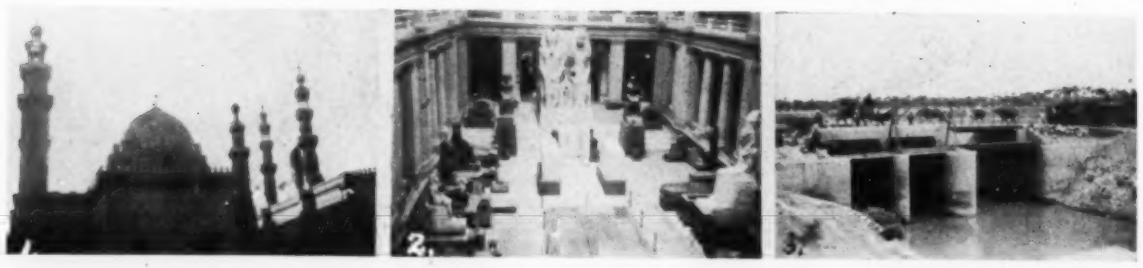
Tiny, filigreed ornaments worn by a princess who lived thousands of years ago; earrings and *objets d'art* which amused royalty when our ancestors were dressing in skins and bopping their food with war clubs; models of ships, of fighting legions, of men going about their daily tasks; hieroglyphics—it's all enthralling.

But that's only a part of the exhibits. Magnificent stone sculptures, mummies, tombs, sarcophagi—but it's so much more interesting than it sounds that I shan't go further.

Photography is forbidden; but with the unobtrusive little Contax I captured a number of snapshots of the exhibits. Somehow, my conscience never hurts me when I break "No Photographing" rules. It may be, though, that King Tut's curse will punish my sin.

(*Concluded on Page 7, Column 1*)

Remnants of an Ancient Civilization



(1) One of the more than 500 mosques which dot Cairo, lending brightness and gaiety to a city which was "civilized" when Europe was a savage land. (2) Stone sculptures, mummies, and sarcophagi in the fascinating museum in Cairo. (3) Irrigation canal in the Egyptian interior, near Cairo.

Around the World

With George F. Taubeneck

(*Concluded from Page 6, Column 5*)

* * *

Superstition Revived

Perhaps one reason for the wholly unique nature of Mohammedan architecture is that the religion forbids the representation of any living creature. Ingenuity in art and design was thus forced.

Fortunately for the antiquarians, the ancient Egyptian artists were under no such handicap. Most of their art which has survived depicts the customs and life of the times.

The hieroglyphics, for instance, can have meaning and significance to the layman; even though they defied attempts at actual translation until the nineteenth century, when Jean-Francois Champollion discovered the key. Hieroglyphics are picture writing, and remind those who have seen American Indian remains in Arizona and New Mexico of the pictographs of our own aboriginals.

Just as Western nosies have glorified Hindu mysticism and founded cults based upon the teachings of the Yogi, so have charlatans and misguided occidentals taken up with the superstitions of old Egypt, professing to find therein new clues to the spiritual life.

Present-day followers of the occult nave built up systems of prophecy from the mathematics of the pyramids' design. Meaning is found in the directions and angles, and codes of living have been devised from what these quacks and cranks think they see in the objects which have been removed from the tombs.

Modern Cairo, of course, finds all such folderol great life. Cairo today is the executive capital of the Mohammedan world, which embraces 220,000,000 adherents in many lands, of many races. Mysticism is as remote from Islam as the *U. S. Pharmacopeia* is from Mary Baker Eddy's *Science and Health with Key to the Scripture.*

* * *

Untouched Egypt

King Farouk, the boy sovereign of Egypt, is the descendant of a dynasty. His great-great-grandfather was Mohammed Ali Pasha, who took things in hand at the beginning of the nineteenth century. His grandfather was Ismail Pasha, under whose reign the Suez Canal was dug, and railways laid down.

These rulers have been peace-loving, and have done as little as possible to disturb the status quo—which is exactly what Egyptians seem to want. Modernity and progress interest them not at all. They want to be left alone. What was good enough for their fathers is good enough for them .

Those of us who were brought up in the Bible Belt are interested to note that things haven't changed much in rural Egypt since the days of Abraham and Sarah, of Joseph and his jealous brothers.

Moses was found in the bullrushes of the river Nile by a daughter of one of the Pharaohs, who ruled until the coming of Christ and the Roman conquerors. The Pharaohs have gone, and so have the Romans; but the Nile remains, and the bullrushes.

Abraham sojourned in Egypt some 4,000 years ago. Egyptian history goes back 3,000 years before that. What's more, archeologists have now unearthed evidence pointing to civilizations in Egypt far antedating even those on record! And, judging by the written and painted records, methods of agriculture have improved but little in all that time.

Remaining static is the curse of fertile countries. So it is with Egypt. The Nile delta has yielded grain for centuries, and the crops never fail. Only the simplest agricultural methods are necessary to bring forth food.

Most of Egypt is sandy desert; but the Nile brings down rich alluvium every year from the heart of Africa, refertilizing the land annually when it reaches flood tide.

The land of Goshen, familiar to all Bible readers, is a green plain, entirely under cultivation, as you can see from an airplane. It might be noted, in passing, that Egypt is an aviator's paradise. Flying conditions are unflaggingly ideal. Fingering out from the Nile are numerous irrigation canals, and from the canals branch out ditches. Occasionally a palm tree breaks the flat monotony.

In addition to King Cotton, garden truck is raised, and corn, rice, flax, and barley. Wooden ploughs, drawn by cumbersome oxen, till the soil. Water is lifted from the canals by a series of hand-operated "wells," which form a sort of bucket brigade. Along the canals veiled women watch over small herds of sheep and goats. Cattle traipse around, foraging at will.

The farmers, or "fellahs" live in villages of baked mud huts, shaded by date palms. They thresh as did men of Bible times, with ox treadmills. Familiar sight on the Egyptian desert is ox-power "machinery," with the heavy beasts circulating endlessly as they pull a sort of merry-go-round.

Camels and donkeys are beasts of burden. So are women, who carry loads on their heads. As in Java, the people of the soil seem patiently and eternally industrious. With their simple lives they are content. Most hospitable to strangers, they are peaceable and happy. Neither their religion nor their government exploits them. The land gives them a living, and their fatalistic beliefs give them no grounds for ambition.

Education, however, is spreading. And when the Egyptian is educated, he becomes volatile, self-important, loquacious, and rambunctious. As in China, it is the students who are the most militant nationalists.

At present Egypt is a question mark in world politics. It remains, as it was in the days of the Caesars and Alexander the Great (who founded Alexandria) and rulers ages before them, the hub of the world. It is the line of demarcation between East and West.

But revolution-crying students, a Mussolini ambitious to be a new Caesar, a Last Stand by Great Britain, trouble between Germany and Russia and Turkey and the turbulent Balkans, Arab-Jewish-Christian conflict, or revolt in the East nothwithstanding,—history teaches us that the politics and economic fortunes of the times will pass over Egypt as dark clouds.

The *fellah* and his oxen, his camels and his donkeys and his wives, will continue to turn the rich soil with wooden sticks, basking in the sunshine, dreaming in the sunset glow on the Nile, and comfortably aware of the majesty of the monuments which successive dynasties and cultures have left behind them for the simple edification of a simple people.

* * *

More Facts & Figures

The great river Nile runs between sandstone cliffs from Haifa to Esna, with a stretch of granite near Aswan, where the valley narrows to half a mile, and limestone from there through Luxor to Cairo where the valley widens to over 10 miles.

Fertile lands occupy the floor of the valley between the river and the cliffs, and north of Cairo they spread out in a silt-created Delta, forming the richest soil in the country. The Nile has a regular yearly rise and fall and attains its maximum about the end of May, the average rise at Cairo being 13 ft.

Inseparably bound up with agricultural development in Egypt is artificial irrigation. Extensive reservoir works, consisting of a dam at Aswan and three barrages each at Esna, Asyut, and Zifa, store up 2,423,000,000 cubic meters of water, and regulate the flow of the river.

Previously we have noted the country's unnatural dependence on a single product—cotton. Government realization of the danger lying in complete dependence on a single crop has led to diversification. Now wheat, barley, beans, lentils, onions, maize, millet, rice, and sugar-cane are all produced in fairly large quantities.

Fishing is also carried on quite successfully on the seas, lakes, and the Nile and canal, and the waters west of Alexandria are famous for abundant growth of sponge of good quality.

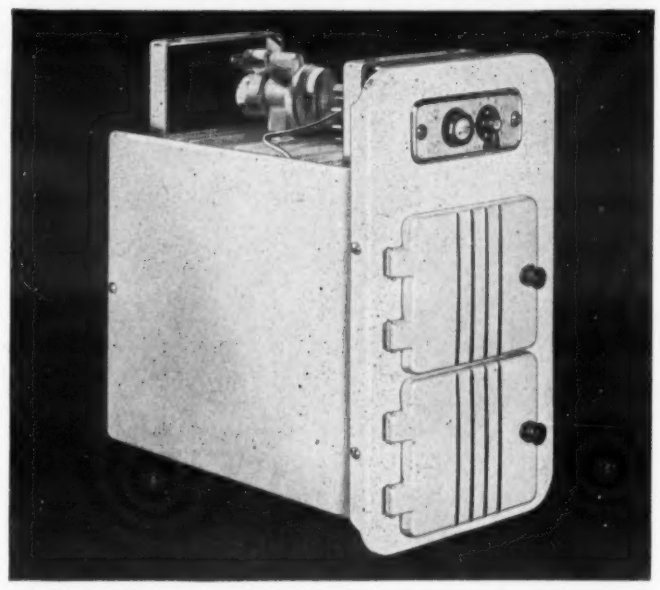
Phosphate rock, petroleum, and manganese iron ore are the principal minerals mined here, with zinc, lead, gold, silver, and salt also to be found.

Manufacturing still takes a back seat here, but a tariff bill recently passed favoring the development of domestic industry, and the adoption of a plan for wider diversification, have proven stimulating to manufacturing activity.

Cigarettes, sugar, petroleum products, boots and shoes, rugs, leather, furniture, and matting and basket work are the chief manufactured products now.

A Political Discussion in Cairo Cafe

A couple of nationalists caught in the midst of a heated political argument in a Cairo cafe. The educated Egyptian, writes George Taubeneck, is politically "volatile, self-important, loquacious, and rambunctious."



Model FFB-4 Evaporator photographed from above to show location of Fedders Automatic Expansion Valve and Hangers.

To Further Extend the Convenience of

FEDDERS

PACKAGE

MERCHANDISE . . .

Series FFB *Fast Freezing* Evaporators Now Offered with PORCELAIN FRONT SHIELDS and SIDE BAFFLES

To simplify installation and further carry out the Fedders principle of complete low sides on a package basis, Series FFB Evaporators are available with vitreous Porcelain Side Baffles and Front Shields. Front shields are equipped with satin finish chrome plated doors with polished trim. Models FFB-2 and 3 have a single door and Models FFB-4, 5 and 6 have two doors. Shields are punched for standard cold controls.

Showing convenient access to ice cube trays. Door hinges are equipped with springs so that they close automatically.—Automatic Expansion Valve and Trays standard equipment. Cold Controls supplied only when specified on orders, at extra cost. U. S. Pat. No. 1,970,106.

FEDDERS MANUFACTURING CO., 57 Tonawanda St., Buffalo, N. Y.

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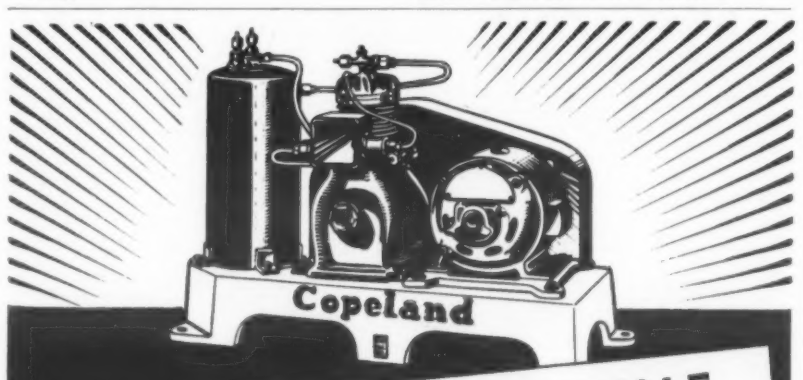
712 Beacon St., Boston · 175 Luckie St., N. W., Atlanta · 1501-1509 W. Eighth St., Los Angeles

ARE YOU GETTING YOUR COPY OF THE FEDDERS NEWS?



The SUPERIOR LINE that PUTS YOU AHEAD of ORDINARY COMPETITION

COPELAND *Commercial* **REFRIGERATION**

● THE many precision-built manufacturing features exclusive with Copeland, give aggressive Copeland distributors the distinct advantage over ordinary competition. This great line of super-built units delivers smoother performance and a Copeland sales demonstration convinces prospects quickly. Sell Copeland—because Copeland is going over big! A few territories available. Write.

COPELAND REFRIGERATION CORPORATION
Manufacturers of a complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.

Copeland
DEPENDABLE *Electric* REFRIGERATION

Do YOU know the Answers?

Count 20 points each for the correct answers to the following questions. Can you score 80? Don't look now, but the answers are on page 18

1. The first "horseless carriage" is now on display at—
   The Field Museum — The Smithsonian Institute
   Coney Island — The New York Museum
2. When a man says "Okeechobee," he means:
   An Indian herb — A disease of the lungs
   An ultra-modern vegetable — A lake in Florida
3. To what tolerances are I. D. and O. D. of Bundyweld Tubing held?
4. In baseball, a "cripple" is:
   A player with a broken leg — A long foul ball
   A pitch with nothing on it — A bat rack
5. When you say "Tyrannasaurus Rex" you are referring to:
   Julius Caesar — A Mental Condition
   Your mother-in-law — A prehistoric dinosaur

The Answer to Your Tubing Problem is
BUNDY TUBING
BUNDY TUBING CO. . . . DETROIT

Commercial Refrigeration

Meters for Counter Freezers Eliminate Delinquent Accounts

LOS ANGELES—With the adoption of the meter plan of selling in its retail operations, Super-Cold Corp., commercial refrigerator and counter-freezer manufacturer, claims that delinquent accounts have dropped to zero from an average of 22%.

Repossessions also, the company claims, have dropped from an average of 7% to less than 2%.

The firm adopted this policy because it appeared that customers were installing commercial refrigerators and using the profits from them to increase inventories or pay off old debts, thereby becoming delinquent with the factory.

New Equipment Cuts Cost Of Refrigeration 67%

TOLEDO—C. B. Carr, General Refrigeration Sales Co. representative here, recently sold a Lipman Model 207 ammonia compressor to a local meat market. The machine, serving two 10-foot display cases and a 17x10 x10 walk-in cooler, holds case temperatures at 36° F. and a temperature of 34° F. in the cooler.

The equipment replaced a 10-hp. compressor on the cooler and a 1½-hp. compressor on the display cases. The merchant has reported a reduction of 67% in operating costs.

Mills Compressor Used In RACI Laboratory

CHICAGO—A 1-hp. Mills Novelty Co. commercial refrigeration machine is undergoing a real "acid test" in the laboratories of Refrigeration & Air Conditioning Institute here. The unit is used to provide RACI students with practical experience in the application of refrigeration to commercial problems.

Designed primarily for use in refrigerating a walk-in cooler, the Mills unit is so connected that it may be used also to operate a floral display case in multiple connection with a meat market display case. Compressor is of the twin-cylinder reciprocating type, air-cooled, and is charged with 15 lbs. of methyl chloride.

By means of the Mills unit students are able to make actual tests and measurements on such factors as differential, range, two-temperature control, natural circulation, forced draft, refrigeration load, heat leakage, multiple hookups, valve adjustment, coil selection, and operating temperatures and capacity.

Super-Cold Distributorship Formed in England

LONDON—Offices and display rooms for a new company, organized for the United Kingdom and northern Ireland, have been opened at 266-268 Gray's Inn Road here.

Chairman of the board of directors of the new firm is the Rt. Hon. Lord Carnegie. Other directors are: James C. Gibson, J. Roger Orr, R.T.D. Stoneham, and Albert Rebel, export manager of Super-Cold.

5-Cent Malted Milks Show Profits to Dept. Stores

MINNEAPOLIS — Selling 6-ounce malted milks for 5 cents is bringing in $100 a day to one department store here and $125 a day to another, Max Rudoy, Super-Cold Corp. representative who sold the malt freezers, reports.

On a recent Saturday, the Emporium Department Store sold 6800 malts, $340 worth, resulting in a net profit of $188.

Puro Filter Markets Photographic Tank

NEW YORK CITY—Puro Filter Corp. of America has developed a new type of equipment for application in the photographic field, consisting of a developing tank placed in a water bath.

Both water and developing solution are cooled or heated to the desired temperature by means of direct connection to a small or large capacity high side, depending upon the size of the tank. This is thermostatically controlled so that a constant temperature of about 65° F. can be maintained.

Where running water is used for washing purposes, a Puro filter is installed to keep the bath clear of impurities which are frequently the cause of unsatisfactory prints. Number and installation of such devices depends upon studio requirements and size of the tanks.

Other applications of the same principle of refrigeration and filtration are adaptable for X-ray developing the doctors' and dentists' offices.

Evaporative Condenser Cuts Water Cost 95%

CINCINNATI—A Carrier evaporative condenser is effecting a saving of approximately 95% in water consumption of the 30-ton air-conditioning system in the Hub Cafe here, claims David J. Kraus, manager of the air-conditioning division of Harten-Knodel Distributing Co., Carrier representative in this territory.

The condenser, first installation of its kind in Cincinnati, reduced water consumption from 4,500 gallons per hour to a maximum of 125 gallons, Mr. Kraus says. Water is supplied through a ½-inch pipe, instead of the 3-inch pipe formerly required for a system of this size.

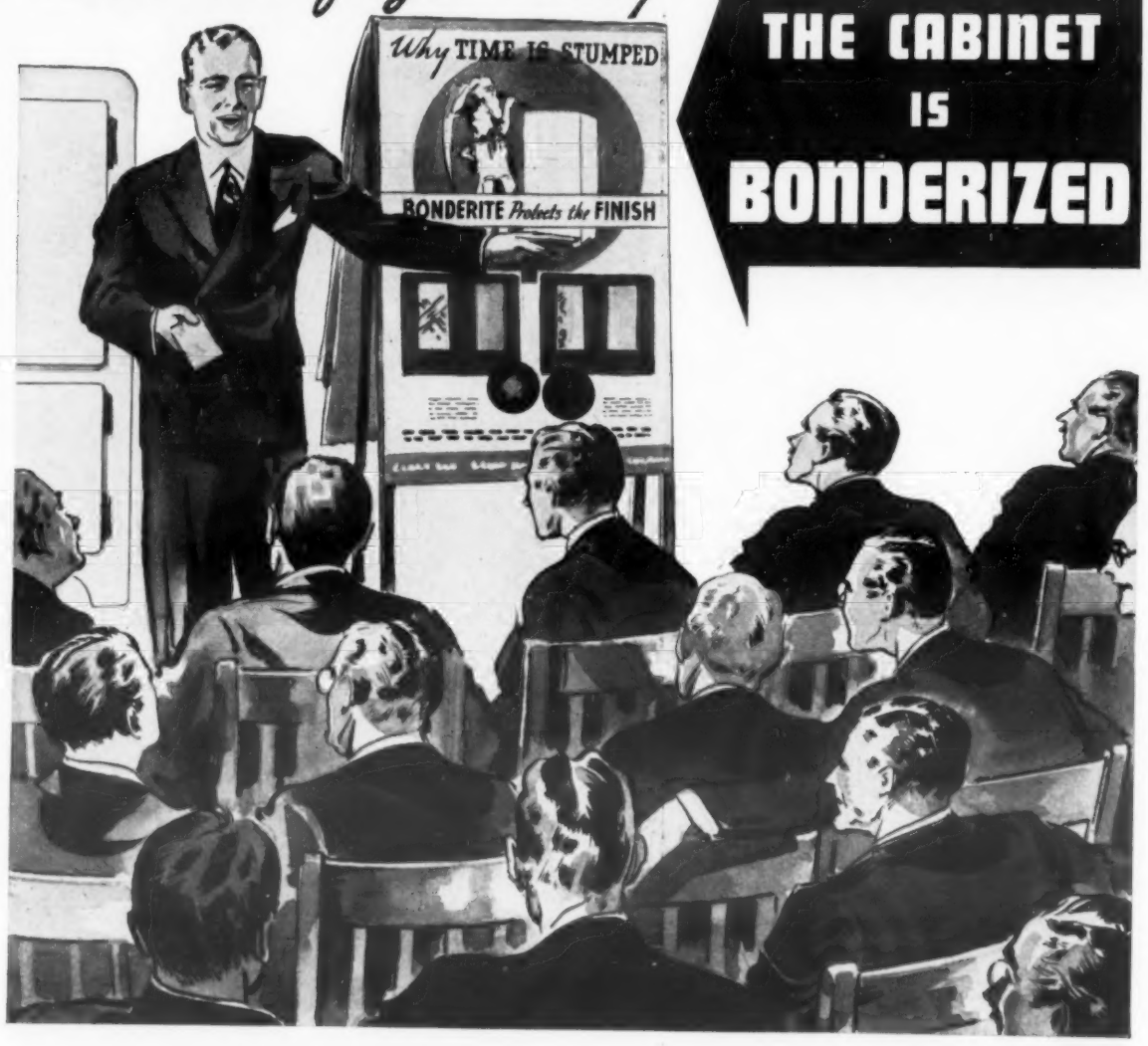
Large volumes of air are used over sprays that are supplied water by a small motor, giving the cooling effect to the hot gas lines which are run into the evaporative condenser from the system.

Albert S. Hibbs, superintendent of the Cincinnati waterworks, inspected the system recently and said he was impressed with the saving in water that it makes possible.

Harten-Knodel has made five other installations in Cincinnati using evaporative condensers, Mr. Kraus says. The jobs, ranging in size from 30 to 60 tons, have not only effected a saving on water consumption, but show a saving of approximately 8% in electric current also, he states.

And don't forget to say—

THE CABINET IS BONDERIZED



Wherever salesmen meet for instruction, make sure that they are fully informed on the extra quality provided by Bonderizing.

At sixty regional sales meetings, General Electric made a special point of this feature. Every man was told that the General Electric cabinet was Bonderized . . . and why. Every man was posted on the extra value Bonderizing gives—how it holds the finish—how it prevents peeling and rusting—why it helps to maintain the original lustre for years longer than the unprotected model.

No salesman can sell intelligently without knowing all the sales features. Show them how Bonderizing adds quality to the product.

PARKER RUST-PROOF COMPANY, 2197 E. Milwaukee Ave., Detroit, Michigan

For more than 21 years, we have devoted our entire time, talent and energy to the improvement of rust-proofing methods. A book showing what a refrigerator salesman should know about Bonderizing is available. Write for one today.

PARKER RUST-PROOFING processes
BONDERIZING • PARKERIZING

Drinking Water Requirements for Various Types of Service

Standards approved by National Electrical Manufacturers Association (Nema). See story on page 1.

The standard delivered water temperature and amount of water per hour for different classes shall be as given in the following table:

Type of Service	Delivered Water Temperature Fahrenheit	Gal. per person per hour	Waste and consumption per person per hour Ounces	Consumption only per person per hour Ounces	People served per Gallon
Office (Cup)	45-50	.033	4.2	4.2	30
Office (Bubbler)	45-50	.083	10.5	4.2	12
Light Mfg.	45-50	.143	18.3	7.32	7
Heavy Mfg.	50-55	.20	25.6	10.24	5
Hot Heavy Mfg.	55-60	.25	32.0	12.8	4
Restaurant	40-45	.1 gal. per person			
Cafeteria	40-45	.083 gal. per person			
Theater (Movie)	45-50	1.0 gal. per 100 seats			
Theater (Legitimate)	45-50	1.0 gal. per 100 seats continuous capacity.			
Schools	45-50	Each fountain shall have storage capacity to provide 5 gallons in 10 minutes. Same as office			
Hospitals					
A. per bed	45-50	.083 gal.			
B. per attendant	45-50	.083 gal.			
Hotels	45-50	.08 gal. per hour per room.			
Public Fountains (Amusement parks, fairs, etc.)	45-50	20 to 35 gal. per hour			
Department stores, hotel & office building lobbies	45-50	4 to 5 gal. per hour per fountain			

Hello, U.E.I.?
Can You Furnish me a
TRAINED
REFRIGERATION MAN?

We train men for positions in the Refrigeration and Air Conditioning Industry. We realize that in this work we owe a duty to the Industry as a whole as well as to our students. We know that if we are to benefit our students, they must be trained the way **you** want them to be trained.

Therefore, leading manufacturers have cooperated in preparation of the U. E. I. Courses in Electric Refrigeration and Air Conditioning. When you hire a U. E. I. man, you may be assured he "knows his stuff". He is practically, thoroughly and authoritatively trained and capable of rendering efficient service to you.

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for Shop, Installation, Service or Sales work? The U. E. I. Placement Service can recommend a man to fill the position. We have men available in all parts of the country.
LET US SERVE YOU

Modernizing Bureau to Issue Booklet Illustrating All-Electric Kitchens

NEW YORK CITY—To fill a demand by several local bureaus and utility companies, National Kitchen Modernizing Bureau plans to issue a booklet and two folders on the all-electric kitchen, suitable for distribution by bureaus, electric leagues, and utility companies to consumer prospects.

The booklet, 6 by 9 inches and containing 16 pages, is titled "Announcing the New Electric Kitchen." Cover is in four colors, with an illustrated title page. Text and illustrations define a modern kitchen and tell its advantages in time and labor saving, its contribution to family health, its beauty and pride in possession.

Explain Equipment Location

Proper placing of equipment is explained, and its importance stressed. Four attractive, all-electric kitchens are illustrated, each in four colors.

A page of text and illustration is devoted to each of the following: refrigerator, range, dishwasher, and water heater. Two pages with illustrations cover kitchen lighting, convenience outlets, table cookery, ventilation, and the electric clock.

Illustrate Practical Kitchens

The kitchens illustrated are practical, and would be relatively inexpensive to install. None of the electrical equipment shown is identifiable by brand, and no brand names are mentioned.

Purpose of this, the bureau explains, is to fill a need where literature from electrical manufacturers cannot be used—such as in the case of local modernizing bureaus representing a variety of dealers, or utility companies, merchandising either competing brands or no appliances at all. The material is not intended to duplicate or compete with literature prepared by individual manufacturers.

Two Pictorial Folders

The two pictoral folders prepared by the national bureau are suitable for mailing or other distribution, either as pick-up pieces for store callers or as stuffers with monthly statements.

Each folder contains a brief sales message on kitchen modernizing, and is attractively illustrated throughout. Space for dealer's imprint is on the back of each folder.

First folder, titled "An Electric Kitchen is a Happy Kitchen," has a two-color cover. Inside pages illustrate two colorful kitchens, with text concerning the advantage of an all-electric kitchen and a discussion of the electrical equipment. Back page carries mention of kitchen planning, time payment, and step-by-step modernizing.

Contents of Second Folder

Second folder, six pages, is titled "For a Healthy Family—A Wholesome Kitchen." Inside pages include views of a modern kitchen, a diagram of steps saved in the modernized kitchen, and a selling text covering electrical equipment, its advantages, planning assistance, time payments, and a step-by-step modernizing.

Production and price of the material is conditional upon the number of orders received. If orders warrant, production will be completed by the end of August, for dealers' use in connection with their fall promotional activities.

Auto Jobber to Distribute Stewart-Warner Radios

BALTIMORE—R. W. Norris & Sons, auto supply jobbers and Leonard distributor here, has been appointed to handle the distribution of Stewart-Warner radios throughout Maryland, the northern part of Virginia, eastern West Virginia, and District of Columbia. The concern will not distribute the Stewart-Warner refrigerators. R. Wentworth Norris is in charge of the refrigeration and radio activities of the company.

R. P. Deubell, formerly an executive of the Eisenbrandt Co., appliance distributor, has been appointed representative of the Norris company in Western Maryland.

The Norris company is distributor of Leonard refrigerators throughout Maryland, with the exception of the Baltimore area where its distribution is handled by The May Co.

Oiled Silk to Be Used For Dish Covers

NEW YORK CITY—Just introduced by the Blossom Mfg. Co., manufacturers of oiled silk and oiled silk products, is a set of three oiled silk dish covers, of graduated size, called "Protections," to be used over bowls or dishes placed within a refrigerator.

Specialized Letter to Doctors Brings Quick Results in Utility's Campaign to Sell Slow-Moving Chest Models

DENVER — One specialized sales letter, aimed at the right group of prospects, did, in three days, a job which three years of general sales effort had failed to do—and sold more than 30 lift-top refrigerators for Public Service Co. of Colorado.

The promotion was conceived by J. M. Eakins, manager of the utility's refrigeration sales department.

About three years ago, when the Government decided there should be a refrigerator in every home, Public Service Co. of Colorado bought 30 Kelvinator lift-tops, expecting to sell them within a fortnight. But the idea wasn't popular. Even though they were low priced and did the job, prospects didn't want them. Put out on trial, they always came back.

Price of the units went down from $130 to $80—and the utility's register still showed "no sale." Special sales were held on the units, extensive newspaper advertising was built around them, large window displays showed the advantages and economy of the smaller refrigerators—and still the public wouldn't buy.

A puzzled man was Mr. Eakins, to whom by this time the job of selling the lift-tops had become almost an obsession. Finally, just a few weeks ago, he hatched an idea that crowed almost before it was feathered.

The doctors!

The refrigerators were made to order for them—just the right size for holding serums and cultures. Why not try a direct-mail campaign?

So a list of 1,666 physicians and surgeons in Denver was compiled, and each of them was sent a letter and a card—the campaign costing $80.

Second day after the letter was sent, 35 refrigerators had been sold! Out of its regular stock, the utility had to buy more, of several different kinds—even some with side entrances. The idea had clicked.

The mailing was this: A small black-and-white card accompanied the personal letter. The card had a black background, and the lift-top and reading matter were white. At the top was the timely slant: "Now! A Kelvinator for the Doctor's Office or Laboratory."

Below was a picture of the unit, with top up, then the model number and this brief description: "Opens at the top . . . ideal for holding serums and cultures . . . shelf area 4.3 sq. ft.; food storage, 2 cu. ft.; 42 ice cubes; 3.2 lbs. of ice per freezing; 2 in. Kelvatex insulation all around. Overall dimensions: height 36 in.; depth 19 in.; width 27⅞ in." Then the company name and symbol.

The letter, multigraphed with a fill-in, was signed personally by Mr. Eakins. It was of the conversational type, on Public Service Co. stationery. It read:

"Dear Dr. Smith: When I came down to work this morning the boss said: 'You know some doctors, don't you?' I admitted proudly that some of my best friends are doctors. And then he said: 'Here's something that will save money for every doctor in Denver.'

"He handed me a card, like this one I am sending you, and pointed to the Top Lift Kelvinator.

"'We've only 25 of these left,' he said, 'and when they're gone we can't get any more at the old low prices. For a doctor's office or laboratory this Top Lift Kelvinator is *the* refrigerator—just right for holding serums, cultures, and the like."

There followed a description of the unit and special price offer, $75. A week's free trial was also offered, and terms of $5 down and $2 a week advanced to those who wished it.

Mr. Eakins used an "Ok, I'll take it" form in the letter's lower left-hand corner. By initialing the letter and mailing it back, the doctor got a free trial, delivery guaranteed in 24 hours. In nearly all cases, units put out on trial were not returned.

59,339 Refrigerators Sold By Associated System

NEW YORK CITY—Outdistancing its campaign quota by a wide margin, the 1936 Refrigeration Jubilee, summer sales drive of the Associated Gas & Electric System and its properties and dealers, resulted in 59,339 mechanical refrigerators being sold by the close of the contest period, June 30.

Florida Public Service Co., with 214.2% of quota, won the President's trophy for having led its division and group in company and dealer electric refrigerator sales. In the gas refrigeration division, K-T-I, with a 300% quota record was leader.

The Rochester division, with 10,222 refrigerator sales, established the record for the greatest number of company and dealer sales in the electric division. Southwestern Pennsylvania led this group with 174.2% of quota sold. Rochester also led in company sales with 189.3% of quota.

Florida Power Corp., runner-up for the President's trophy, was first in company sales in its group, with 251.5% of quota. Greatest number of units in the company sales contest, 2,355, was sold by Virginia Public Service Co.

RIGHT DOWN THE LINE

NEW C-H Replacement Control Has EVERY FEATURE YOU WANT

The famous Cutler-Hammer Control, time-tested on a million refrigerators . . . is now available as a replacement unit.

Here are a few reasons for its popularity: Sure protection to motor, wide-range cold control, modern appearance, proved performance.

And here are Service Facts for the Service Man: 4 MODELS FIT NEARLY EVERY BOX. With two temperature models in 24" and 48" tubes or two pressure models for sulphur dioxide and methyl chloride systems—you're equipped to service 99% of the boxes in your community . . . with smaller stock, less money tied up, faster turnover, bigger returns, no shelf losses.

EASIER TO INSTALL; EASIER TO ADJUST. Unit mounts either horizontal or vertical, just two screws to insert. Differential and range adjustment made easily.

Every day more of the millions of old refrigerators move into the zone where they need repairs. With C-H Control that fits 99% of these boxes, that provides every advantage, it is easy to get the customer's O. K. CUTLER-HAMMER, Inc., *Pioneer Manufacturers of Electric Control Apparatus*, 1362 St. Paul Avenue, Milwaukee, Wisconsin.

Send NOW

For full facts on this profitable item. FREE Booklet gives all information, diagrams, etc., also Replacement Control for popular-make Beverage Coolers and Ice Cream Cabinets. Same simple, reliable, proven mechanism. Call on your nearest jobber for stock.

CUTLER-HAMMER
REFRIGERATION CONTROL FOR REPLACEMENT SERVICE

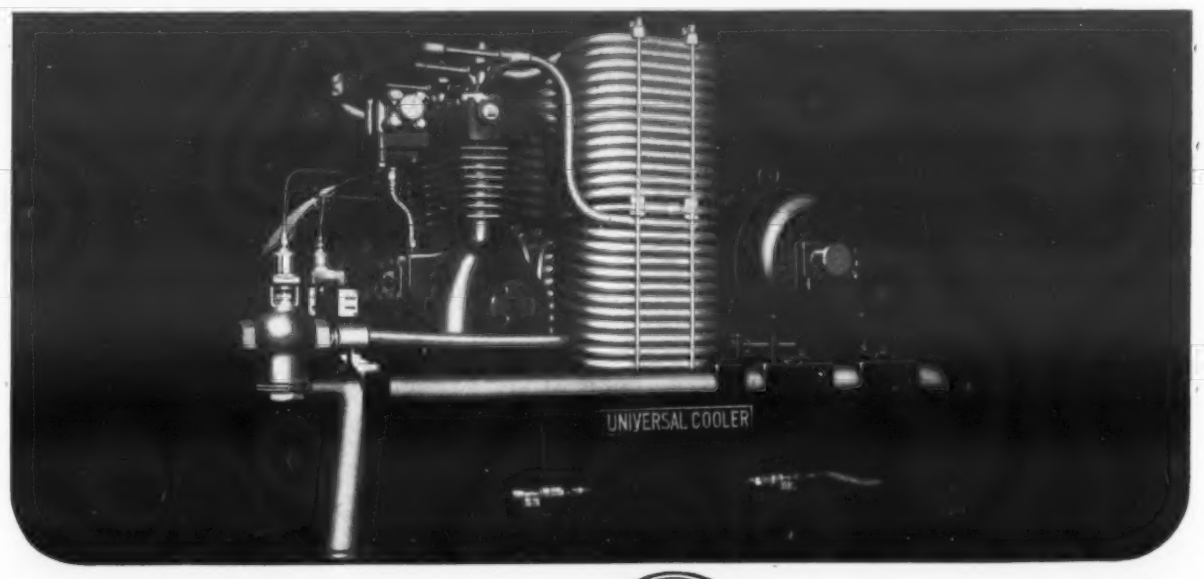
new EFFICIENCY . . . new CAPACITY
Lower OPERATING COST

Fifteen horsepower condensing units have certainly come into their own . . . This Universal Cooler model delivers the goods with a vengeance . . . Every performance factor is favorable . . . Consider these items . . . More than 16% increase in capacity at 40° Suction and 70° water (BTU/Hr.) . . . 3% lower power consumption . . . Over 18% increase in BTU's per kilowatt of current . . . Altogether "something to write home about" in automatic large capacity condensing units.

Universal Cooler Units have come to be called "World's Standard" by many because of attention to details which make such a difference in performance, economy and long life . . .

You'd better get the facts on the WHY of what Universal Cooler is accomplishing . . . Drop us a line to get the details on this 15 horsepower job.

Universal Cooler is large enough so that your company can benefit by its quantity purchases . . . intensive, farsighted engineering . . . and careful, closely inspected production. With all this Universal Cooler is still small enough to give individual attention to your own requirements . . . promptly.



World's Standard Commercial Condensing Units
UNIVERSAL COOLER
Backed by 14 years Precision Refrigeration Production
DETROIT, MICHIGAN
and in Canada BRANTFORD, ONTARIO

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AUGUST 12, 1936

The Golden Fleece

REVOLUTION and confiscation in Spain. New prohibitive tariffs in Australia, which virtually end the importation of American refrigerators. Impassable monetary and exchange barriers in Germany, Austria, Hungary, and Czecho-Slovakia. Import restrictions in Italy and Denmark which have shut off business with America. Quota handicaps in France. Poverty and turmoil in the Balkans. Nothing doing in Russia. Is it any wonder that American export managers are depressed, repressed bundles of jumpy nerves these days?

This editorial, however, comes not to bury the export business, but to praise it. As saturation of the United States market for refrigeration products continues its precipitate approach, it is our belief that foreign markets will take up more and more of the production of American factories, and keep the industry in its present prosperous condition for many, many years to come.

As most readers of this paper probably know by this time, the editor of ELECTRIC REFRIGERATION NEWS has just returned from a seven months' trip around the world, during which time he made an intensive study of markets for and distribution of refrigeration and air-conditioning equipment in the South Seas, the Antipodes, Malaysia, the tropical East, the Near East, and Europe. He was received by subscribers to the NEWS in every country, and saw the past, present, and future of the "export market" through their eyes, as well as through his own.

It is true that the editor found the refrigeration business at a standstill in many European nations. It is true that he found the growth of economic nationalism has resulted in many schemes to keep money at home, schemes so ingenious and so varied that attempts at their circumvention have grayed the heads of most American export managers.

But it is also true that he found the refrigeration business booming in England and Palestine, going strong in Sweden, Switzerland, and Singapore, coming up fast in Holland and India, doing well in France despite the quota restrictions, and offsetting high saturation in the South Seas by catering to a replacement business which is as regular and frequent as automobile replacements in the United States.

In most of the foreign markets the initial job of consumer education has been much more difficult than it was in America. Hence it has taken longer to develop the business. Instead of simply going from ice to electric refrigeration, foreign nations have jumped from no refrigeration at all directly to the most modern equipment. The editor of the NEWS takes great pleasure in reporting that this tremendous educational job has been so well conducted, and has attained such excellent results, that world demand for refrigeration equipment should rise very soon to a point where it must be taken fully as seriously as the American market by major manufacturers.

Obviously the education of consumers has not proceeded at the same pace in all countries. Its progress has varied according to the intelligence of those consumers, and according to the effectiveness and weight of the promotional effort directed at developing each individual market. In Great Britain, for example, the combination of a highly intelligent populace and aggressive promotion have resulted in a very high volume of business. On the other hand, sales have been slow in the much hotter land of Egypt because the relative ignorance and poverty of 90% of the population have formed a great wall of inertia which is so forbidding that manufacturers have made only desultory attempts to batter it down.

Once a demand has been created in most of these non-refrigeration-conscious lands, however, it seems to grow very fast. In the first place, there rarely is any competition with ice or other forms of refrigeration. In the second, when a prospect has finally become aware of the importance to his health and well-being of this great new invention of automatic cooling, he generally becomes a "fan," and frequently a fanatic. Distributors can count on a most valuable kind of word-of-mouth advertising from their customers, and a spreading of the "gospel" which gains momentum with every sale.

In the tropics the need for proper refrigeration is especially great, and is exceedingly easy to demonstrate. The economy story can be told and shown with great effect to every man who sells food, and to every food buyer who has the means to purchase more than just his day's rations at one time. Furthermore, the rigors of excessive heat and humidity make the replacement business something which can be counted on by a distributor with the same degree of confidence that an insurance agent or automobile dealer counts on business with old customers for steady income. Unless we go back to the study of geography, or go see for ourselves, most of us fail to realize what a large proportion of the world's population lives in very hot countries. In most of these countries the market for refrigeration equipment has barely been touched. The promise the great tropical market holds for the future is so great as to be almost staggering.

Nor do American manufacturers have cause to become discouraged over the future of the vast European market, even though it is in so chaotic a state today. The fact that most European governments, following the trend of militant nationalism which prevails today, are doing all they can to encourage local manufacturing of refrigeration equipment, and to discourage the importation of such equipment from America, the fact remains that any *large-scale* of development of the European market *must come* from America. Here's why:

No local European manufacturer of refrigeration products can ever hope to compete with American prices, freight charges and *reasonable* tariffs notwithstanding. The American home market is so great that quantity production, with its low costs, brings down the prices to a point which no European maker, with his comparatively small home market, can touch. Even should the refrigeration business in the United States eventually level off and begin to fall, it has permitted the creation of vast production facilities which may never be duplicated elsewhere. These great plants, built to supply America, will supply the world in days very soon to come.

For the present, local European manufacturers may continue to operate under the tent of ridiculously high tariffs, or behind prohibitive exchange restrictions. They may continue, that is, until they have skimmed off the top of their respective markets. But volume sales never result from high prices. And when it comes down to selling to the great low-income markets of the world, American manufacturers are the only ones with productive capacity and efficiency equal to the task of supplying these vast markets with equipment at prices the consumers can afford.

Business at home has been so good that most American manufacturers have paid little attention to their export business. This relatively small portion of their sales has been a sort of step-child, an orphan, left in the hands of clerks and swivel-chair managers. True, the oldest and biggest manufacturers have been blessed with ready-made foreign organizations; and a few others have been blessed with aggressive export managers who have gone into the far corners of the globe to establish valuable business relationships with local merchandisers, and to direct the *education of foreign peoples.*

But for the most part the export business has received comparatively little attention. (This situation has also been true in the case of ELECTRIC REFRIGERATION NEWS. Not until foreign subscriptions began pouring in, all unsolicited, did the editors wake up to the fact that the export business had "arrived." In the future, as a result of the editor's long journey and the contacts he made with news sources, the NEWS hopes to present a world picture, instead of limiting its attentions to the American scene).

Like Jason of old, the American refrigeration industry will find its Golden Fleece of future volume and profits in lands beyond the seas. And *now* is the time that refrigeration executives with foresight will want to begin the *intensive* study and cultivation of that important source of future revenue.

Letters

California! The News! Hip! Hip! Hurrah!

California Refrigerator Co.
Refrigeration & Air Conditioning Equipment, Parts, Supplies and Accessories
1077 Mission St. San Francisco, Cal.
Aug. 4, 1936.

Gentlemen:

The citizens of California, including the members of California Refrigeration Co. want to congratulate you and thank you for celebrating your 10th anniversary on September 9th, California's Admission Day into the Union.

You will be interested to know that September 9th is a legal holiday in California and that each year the two secret orders of Native Sons and Native Daughters celebrate this day with mammoth parades, old fashioned western barbecues, early Spanish day dancing in the streets, Spanish fandangos, etc.

On behalf of the Governor of California and the Mayor of San Francisco, I invite your entire staff to California to celebrate your 10th birthday with our 86th birthday. You will be interested to know that Congress admitted California into the Union Sept. 9, 1850, but on account of the slow transportation by boat around Cape Horn, it was 45 days before any citizen in California knew that our wonderful State had been admitted into the Union. In those days, we had no transcontinental railroad, telephone or telegraph lines, air mail lines, or ELECTRIC REFRIGERATION NEWS. It took 45 days to get the news in 1850. In 10 or 12 hours, you are going to have the news that California is celebrating your birthday in grand style.

More power to your well edited and most progressive and interesting weekly publication.

CLARENCE F. (SANDY) PRATT,
President

Excellent Sales Arguments In Recent Editorial

Consolidated Gas Electric Light & Power Co. of Baltimore
New Business Dept.
Baltimore, Md.
August 4, 1936

Publisher:

We admire very much your courageous and timely editorial "Air Conditioning Costs Money And is Worth the Price," which appeared in the July 29th issue of ELECTRIC REFRIGERATION NEWS. The entire editorial expresses exactly the thoughts which we had in relation to the advertisement in question, and thoughts on the subject of air conditioning sales in general.

We would like very much to have your permission to reprint and distribute in connection with local air-conditioning advertising excerpts from this editorial. Since our distribution will be to the prospective consumer of air conditioning, we would omit the direct controversial matter included in your editorial, limiting the reprint to that material included between the sixth and the third from the last paragraphs. We feel that this section of the editorial contains excellent direct selling arguments. Of course, your magazine would receive credit in any reprint.

We trust that you will find it possible to grant us this permission.

JOHN DEB. SHEPARD,
Air Conditioning Representative

Answer: Permission granted to reprint as specified.

It Now Looks Like A Half-Baked Theory

The Curtis Publishing Company
Independence Square
Philadelphia, Pa.

Editor:

We have heard some talk and seen some articles on control of respiration and the removal of moisture from foods in mechanical refrigeration and we wondered what your opinion was as to the trend on this question.

We should appreciate your comments and any article you could send us at your earliest convenience.

CHARLES C. PARLIN,
Advertising Department
Division of Commercial Research.

Answer: For the most recent authentic information on the subject we refer you to reports published in the July 8, 15 and 22 issues of ELECTRIC REFRIGERATION NEWS on the testimony presented at the recent series of hearings which have been held by the Federal Trade Commission in the matter of its complaint against propaganda which has been disseminated by the ice industry.

We're Learning More and More About Australia

Harris, Hutchinson & Co., Ltd.
Refrigeration Cabinets, Porcelain Enamellers, Duco & Baked Dulux Specialists, General Sheet Metal Workers.
Bowden Street
Alexandria, N.S.W., Australia
3rd July, 1936.

Editor:

In your issue of May 20 under the heading of "Around the World" and on page 23, column 5 appears an article relative to our organisation with the following statement:

"Electricity Meter Mfg. Co. and New System Telephones have first call on the Harris, Hutchinson production, but Mr. Harris manages to supply most of the major sales organisations in Sydney as well."

Let us say quite frankly that we regard this statement with a great deal of misgiving and one that requires immediate correction.

We presume that this article was written under the pen of Mr. G. F. Taubeneck, but we are at a loss to understand where this gentleman obtained this information, which is entirely inaccurate.

While we realise it hardly becomes us to quote the ethics of journalism, we certainly are of the opinion that such an important statement should have been confirmed before publishing same.

We can only ask that you will correct this error in your next issue to the effect that this Company is not controlled in any way by any refrigeration house, nor have any of these organisations any financial interest in our business.

S. O. HARVEY, Secretary.

Purchasing Power of the Queensland Market

Buzacotts (Queensland) Limited
443 Adelaide St.
Brisbane
Branches: Rockhampton and Townsville
Machinery Merchants & Manufacturer
Queensland Distributors for FORDSON Tractors and Spare Parts
9th July, 1936.

Editor:

People in Australia and in other parts of the World who are familiar with the relative prosperity of this country will read with some amusement the remarks attributed to the writer by Mr. Taubeneck to the effect that people were too poor to buy sealed unit Refrigerator Machines in any quantity.

The progressive record of this Company indicates that the executive has no such complex and actually in Queensland we sell many hundreds of Westinghouse Sealed Unit machines every year. Naturally anyone approaching sales from the angle that people were too poor to buy would be severely handicapped, and the writer believes that our per-capita sales in Queensland show that this State does not suffer by comparisons with other States of Australia.

Since Mr. Taubeneck's visit, the Company's Directorate has decided to proceed with extensive additions to our premises and you would probably be interested in the enclosed reprint from one of our newspapers.

Your publication of this letter would no doubt correct any impression which might be gained in other parts of the World that Queensland, or Australia, is a poor unprogressive and decadent Nation.

F. G. PATTEL, Sales Manager.

Undabar Beverage Coolers Not Mentioned

Undabar
Division General Import Company
Manufacturers
Electric Beverage and Food Coolers
220 N. Fourth St., Saint Louis, Mo.
Aug. 7, 1936.

Editor:

We are subscribers to your publication and note that in your last issue dated Aug. 5, page 20, answering inquiry No. 2868, dealer North Carolina, regarding beverage coolers you did not give them our name as the manufacturer of a product of this character.

If you will refer to your issue of Dec. 11, 1935, you will note that we took space in your magazine describing the Undabar Cooler seeking dealers.

GEO. V. STEFFENS, President.

Names of Emerson's Officers Mispelled

The Emerson Electric Mfg. Co., Inc.
St. Louis, Mo.
August 6, 1936.

Gentlemen:

We are just in receipt of your July 29 issue and note the news item column 4, page 2, pertaining to the election of new officers.

You have both names spelled incorrectly, and no doubt you will wish to issue a corrected statement in your next issue. If you will refer to the announcement from which this information was taken, you will find that the names should be spelled as follows:

Lester F. Blough
Oscar C. Schmitt

C. A. SWANLUND

Next Edition of the Directory—Jan. 1937

Harvey D. Rush & Sons
Representing Manufacturers and Importers
207 East 22nd St., Kansas City, Mo.

If you have a new directory of manufacturers of air conditioning units, I wish you would please send us one.

We want the 1936 edition.

HARVEY D. RUSH.

Answer: There will be no 1936 edition of REFRIGERATION AND AIR CONDITIONING DIRECTORY. The 1937 edition will be issued in January according to present plans. Copies of the 1935 edition are still available. Price $3.00.

Expression of Appreciation from South Africa

The British Mining Supply Co.
Engineers & Mining Material Merchants
P. O. Box 5107
Johannesburg, So. Africa

Editor:

We have pleasure in enclosing herewith our money order for thirty shillings being the equivalent of $7.00. This is to cover our annual subscription to the REFRIGERATION NEWS and MASTER SERVICE MANUAL.

We would like to express our appreciation of your very fine publication, we always look forward to its arrival.

Air Conditioning

Air Conditioning Is Business Builder For Cocktail Bar

ALTOONA, Pa.—Installation of air-conditioning equipment in the modernistic new cocktail lounge of the Penn Alto hotel here is the latest of several jobs done in this territory by Thomas L. Caum, distributor of Frick refrigerating equipment. Since the system was installed, popularity of the room, which measures about 16 by 45 feet, has increased so much that its size is to be increased in the near future.

Central decorative scheme of the room is an enlarged picture, in full colors, of the famous Horseshow Curve on the Pennsylvania railroad above Altoona. Walls are handsomely paneled, and seats and chairs are covered in red leather upholstery. Radiators are enclosed in cabinet-like structures, which, however, are not part of the air-circulating system.

Conditioned air is introduced into the grille through openings at the top of the columns at either end of the bar.

There are four such openings, facing each end of the room. Openings for return air are at the bottom of these columns.

Before the return ducts enter the unit conditioner in the basement, part of the air is led off to an exhaust duct, at the outlet of which is a 1,400 c.f.m. fan.

When smoke tends to collect in the cocktail room, the fan is used to clear the air; a time switch turns off this fan after a given interval, in case the operator should forget to do so.

Outlets in the transoms of windows in the cocktail room usually serve to vent any smoke or odors, since fresh air is constantly being introduced into the conditioner.

Conditioner itself is a Trane model 4103 floor type. It is arranged for year-round conditioning, and has steam reheaters. The Minneapolis-Honeywell control system works in conjunction with two Frick electric control valves to keep the temperature 10° F. below street temperature, with a relative humidity of around 50%.

Refrigerating unit is a 3-cylinder 5-hp. machine, with Freon-12 as the refrigerant.

Commercial refrigeration jobs installed by Mr. Caum this year include several in packing houses and markets, using Fedders fan units with finned coils in the chill rooms of small abattoirs. Most jobs of this type require a couple of 1 or 1½-hp. low pressure units of sufficient capacity to be shut down now and then so coils can be defrosted. Included in jobs of this type are Schmidt Meat Market, Shaw Bros., Newry, and Roylmler, Altoona packing houses.

Store installations include the Endress Market, Altoona, and the Moorehead Market, Bedford. Display cases, as well as refrigerating equipment, were furnished by Mr. Caum for the two last named.

G-E Survey Shows What Public Knows about Conditioning

BLOOMFIELD, N. J.—What the public thinks about air conditioning is indicated by answers to a questionnaire sent to 10,000 people, the results of which have just been tabulated by the General Electric Air Conditioning Institute. The questionnaire was sent anonymously.

That the public's knowledge of all the functions of air conditioning is fragmentary; that most home owners have not yet considered it for their present homes; but that they definitely would expect it as a feature of any new home, were revelations which stand out in the results.

Only 9% were able to name all six functions performed by modern air conditioning. That the air is cooled was by far the most frequently mentioned fact.

For every 100 who specified that function, only 82 knew that air conditioning warms air, 68 knew that it dehumidifies, 65 were aware that it humidifies, 46 had the knowledge that it cleans air, and only 40 knew that it circulates air.

In answer to the question: "Have you ever thought of it for your present home," 38% replied, "yes" and 51% "no." Two per cent already have it.

Asked: "If you were to buy a new home, would you expect it to be air-conditioned," 58% responded that they would, and 31% that they would not.

Junk Yard Installs Air Conditioning in Office To Promote Efficiency

OMAHA, Neb.—A junk yard here has air conditioned its offices to promote efficiency.

Owner Aaron Ferer observed that during periods of extreme heat work slowed up, lagged behind. Naturally, he blamed the laborers. Investigation, however, proved his analysis wrong. The trouble lay with the office force, which, in extreme heat, fell down on the job.

Air conditioning—a 3-hp. cooling system—was installed in the office. Now five o'clock each day sees the assigned work completed.

'Sales Circus' of Georgia Power Nears 8,000 Quota

ATLANTA—Only 125 units behind quota fulfillment, the "Sales Circus" activity of the Georgia Power Co. to July 15 saw a 7,875 unit total reached, of which 4,636 were refrigeration sales, 1,660 ranges, 1,031 water heaters, and 548 commercial refrigeration and air-conditioning installations.

Representing a quota fulfillment of 98.4%, the July 15 report was the second to the final.

Conditioned Rooms in Demand in Hotel

BIRMINGHAM, Ala.—The twelfth (top) floor of the Tutwiler hotel here was recently air conditioned and rooms on that floor are now in high demand, despite the additional 75 cent tariff billed to patrons of the air-conditioned rooms, the management reports.

Previous to this time the top floor, as in most hotels, has not been popular because of the heat infiltration through the roof.

Tried as an experiment, the air-conditioned rooms have proven so profitable that other floors in the Tutwiler will probably be air conditioned before next summer, the management believes. A similar demand for air-conditioned rooms is reported by the Andrew Jackson Hotel in Nashville, Tenn., where one floor was also conditioned. Both hotels are units in the Dinkler chain.

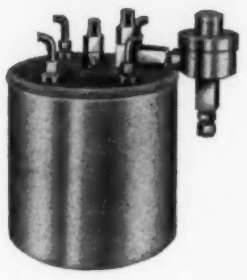
A 43-ton General Electric installation serves the Tutwiler Hotel. An individual room control system is used.

Cooling Ordered for 2 More Cafeterias after Trial

BIRMINGHAM, Ala.—Air conditioning has proved its case with the Britling Cafeteria Co. of this city. After trying it out for a year in one establishment, the concern has awarded contract to Shook & Fletcher Supply Co., local Carrier dealers, for installation in its two other cafeterias.

The air-conditioned eating place enjoyed a business increase of 25%, and the management was faced with the problem of keeping regular customers of the two non-conditioned cafeterias from coming over.

We Have Told You the Story — But Have You Passed It Along?



In a recent survey in a representative metropolitan area, we found hundreds of beer dispensers who had not heard the Temprite story.

When these dispensers learned how Temprite could solve their problem of how to dispense the perfect glass of beer and eliminate their losses, the majority became immediate prospects.

The recent hot weather, by demonstrating the inadequacy of ordinary beer cooling systems has created literally thousands of potential Temprite prospects. Your call can convert them to actual users.

TEMPRITE INSTANTANEOUS 90° 40°

TEMPRITE PRODUCTS CORPORATION
1349 EAST MILWAUKEE AVE. - DETROIT, MICHIGAN
ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

PENN ELECTRIC SWITCH
USES
SYLPHON BELLOWS
in Refrigeration Pressure and Temperature Controls

Penn Electric Controls are well known to refrigeration engineers for their simple efficiency and dependability in service. The careful selection of the finest materials available for the vital points in the construction of this equipment has played a large part in earning this reputation for reliability on the job.

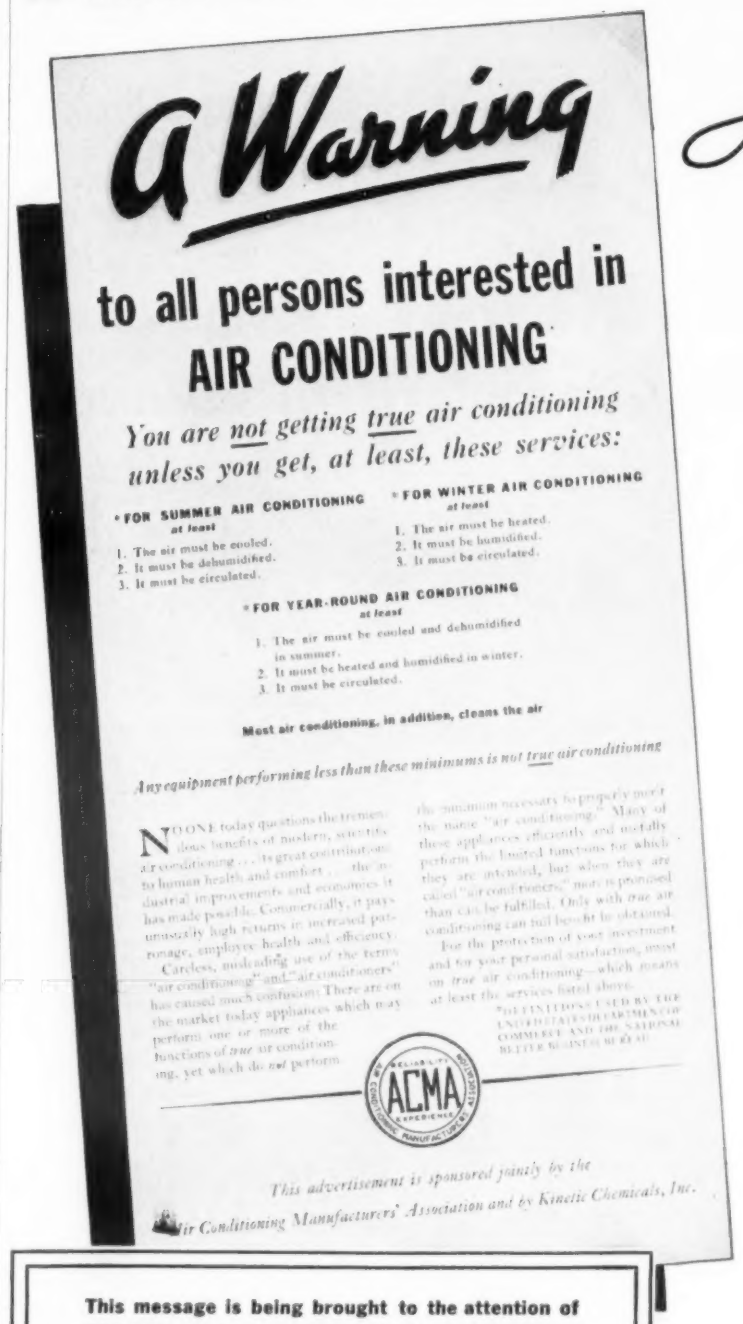
Of course — Sylphon Bellows are used throughout this complete line of Penn Controls.

For these remarkably durable, seamless, jointless metal diaphragms are the result of over 35 years of constant research and application experience. They have been time-proven beyond doubt in the products of the refrigeration leaders.

As pioneers in this field we place our services freely at your disposal. Write for Bulletin PO-121.

FULTON SYLPHON CO.
KNOXVILLE, TENN., U.S.A.

A MESSAGE WHICH WILL HELP PROTECT YOUR *Air Conditioning* PROFITS!



A Warning

to all persons interested in AIR CONDITIONING

You are not getting true air conditioning unless you get, at least, these services:

FOR SUMMER AIR CONDITIONING *at least*
1. The air must be cooled.
2. It must be dehumidified.
3. It must be circulated.

FOR WINTER AIR CONDITIONING *at least*
1. The air must be heated.
2. It must be humidified.
3. It must be circulated.

FOR YEAR-ROUND AIR CONDITIONING *at least*
1. The air must be cooled and dehumidified in summer.
2. It must be heated and humidified in winter.
3. It must be circulated.

Most air conditioning, in addition, cleans the air

Any equipment performing less than these minimums is not true air conditioning

NO ONE today questions the tremendous benefits of modern, scientific air conditioning . . . its great contribution to human health and comfort . . . the industrial improvements and economies it has made possible. Commercially, it pays unusually high returns in increased patronage, employee health and efficiency.

Careless, misleading use of the terms "air conditioning" and "air conditioners" has caused much confusion. There are on the market today appliances which may perform one or more of the functions of *true* air conditioning, yet which do *not* perform the minimum necessary to properly merit the name "air conditioning." Many of these appliances efficiently and usefully perform the limited functions for which they are intended, but when they are called "air conditioners," more is promised than can be fulfilled. Only with *true* air conditioning can full benefit be obtained.

For the protection of your investment and for your personal satisfaction, insist on *true* air conditioning—which means at least the services listed above.

"SET UP IN TYPE USED BY THE UNITED STATES DEPARTMENT OF COMMERCE AND THE NATIONAL BETTER BUSINESS BUREAU"

ACMA RELIABILITY AIR CONDITIONING MANUFACTURERS' ASSOCIATION EXPERIENCE

This advertisement is sponsored jointly by the Air Conditioning Manufacturers' Association and by Kinetic Chemicals, Inc.

This message is being brought to the attention of 698,972 people through the following publications:

Time	625,292
Chain Store Age	15,123
American Restaurant	12,437
Retailing	6,499
Architectural Forum	21,713
Federal Architect	2,300
Building and Building Management	2,462
Building Modernization	13,146
Total Circulation	**698,972**

MISUSE of the terms "Air Conditioning" and "Air Conditioner" has resulted in much confusion and disappointment in the public mind. The future of the air conditioning business depends on continued public faith and confidence in air conditioning equipment.

Appliances which appropriate the name "air conditioner," yet which do not meet the minimum requirements of *true* air conditioning, promise the buyer more than can be fulfilled. Although many of these appliances are efficient and useful in their limited fields, unless they meet certain minimum requirements they are *not true* air conditioners as defined by the U. S. Department of Commerce and the National Better Business Bureau.

We invite your cooperation in our efforts to educate the public in the true meaning of air conditioning.

ACMA RELIABILITY AIR CONDITIONING MANUFACTURERS' ASSOCIATION EXPERIENCE

This advertisement is sponsored jointly by the Air Conditioning Manufacturers' Association and by Kinetic Chemicals, Inc.

General Business Indices Showed Only a Small Decline During July Hot Spell but Individual Reports Reveal Heavy Losses

By Eleanor Blum

DETROIT—Although general business indices for the United States failed to show a major decline on account of the heat wave which swept the country during July, individual stores in the clothing, restaurant, and drug classes for the most part reported severe business declines during the period of intense heat.

On the first and last days of the heat wave which lasted from July 8 to July 14 in Detroit, the temperature reached a peak of 104°, which was six-tenths of a degree below the all-time record here. In other sections, the heat struck as early as July 1 and left parts of the country as late as July 15.

Figures for July 8-11, when the effect of the heat may have been reflected in business conditions, show a slight decrease from the peak which July had previously reached.

Business Week's Index

The *Business Week* index, which takes into consideration chiefly production factors such as steel ingot operation, building contracts, bituminous coal, electric power, miscellaneous, L.C.L. carloadings, check payments, money in circulation, and commercial loans, gave an index figure for June 27-July 4 of 76.5; from July 4-11 of 75.9; and July 11-18 of 76.9. In each case, the figures exceeded those of a month ago by a little, and a year ago by a great deal.

Concerning the index, the July 25 issue of *Business Week* says:

"Business Week's index of business activity for the week ended July 18 reached the highest level since July, 1931, topping the high of last December. At 76.0% of normal, the index represents a gain of 61% from the 1933 depression low. The expected summer slump has not materialized. Counter seasonal increases in demand as well as in production contributed to the relative stability of the industry."

Some Plants Shut Down

In the same issue, the magazine blames drought and threat of strikes for the less favorable outlook for the next few months. Although heat temporarily closed some automobile plants, the slowly diminishing demand from the automotive industry was more than offset by orders from railroad, construction, and ship building industries.

The weekly supplement to the *Survey of Current Business,* put out by the Bureau of Foreign and Domestic Commerce, indicated that although the agricultural situation may have an important influence on manufacturing and sales activity at a later date, for the present there is little indication of a market letdown on either manufacturing activity or retail sales.

The New York Times Weekly Business Index published in *The Annalist* differed from the index previously quoted from *Business Week.* Its July figures show a marked decrease for the week ending July 18 from preceding weeks.

New York Times Index Showed Slight Decline

The decline of the *Time's* index to 100.2% of normal (preliminary) for the week ended July 18 from 101.4 the week previous and the five-year high of 102.2 for the week ended July 4, presumably reflects only a temporary set-back from the recent high level of activity, since there is little change in the underlying situation, according to *The Annalist.*

Power Production Gains

Electric power production was the only component in the index to advance, "reflecting not only the high level of industrial activity, but, even more, the persistence of extreme heat in many sections, which has caused increased consumption by electric refrigerators and fans, as well as for electric pumps in some of the drought areas," the article stated.

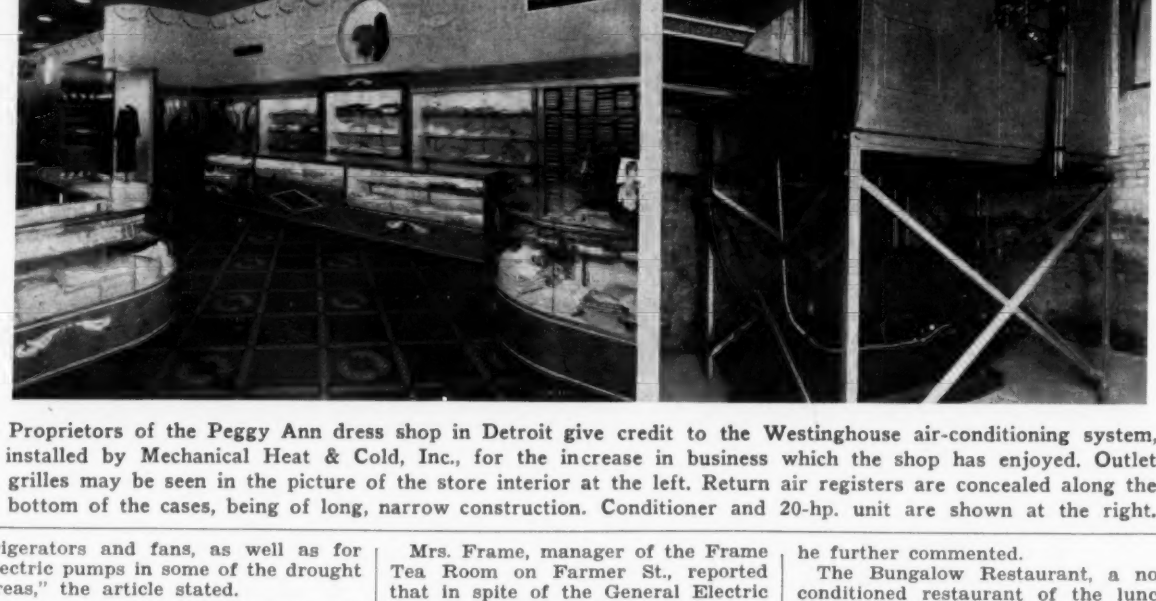
"It is noteworthy," the article continued, "that the districts showing the greatest increase in power consumption over last year were those suffering from extreme temperatures."

Inquiry into the result of the high-temperature period on business in restaurants, drug stores, and clothing stores, showed only a marked inconsistency in opinion among shop-managers as to the value of air conditioning during times of such unusual heat. Restaurants lost business to the light-lunch and soda fountain establishments; drug store sales, except at the fountain, decreased for the most part; and clothing stores felt the effect of a "stay-at-home" inclination on their sales receipts.

Restaurants Were Hard Hit

Restaurants, in general, lost business during the hot wave period because there was very little street traffic, and because heavy food is not a hot-weather favorite. What the restaurants lost, however, soda fountain and light lunch places gained in sales of salads, sandwiches, and cold drinks.

Installation Booms Business for Dress Shop



Proprietors of the Peggy Ann dress shop in Detroit give credit to the Westinghouse air-conditioning system, installed by Mechanical Heat & Cold, Inc., for the increase in business which the shop has enjoyed. Outlet grilles may be seen in the picture of the store interior at the left. Return air registers are concealed along the bottom of the cases, being of long, narrow construction. Conditioner and 20-hp. unit are shown at the right.

Mrs. Frame, manager of the Frame Tea Room on Farmer St., reported that in spite of the General Electric air-conditioning system, business fell off during the period of intense heat because there was no traffic downtown.

Although Rheaume's Cafeteria in the Metropolitan Bldg. had the best July it has had in six years, T. W. Weber, manager, credits most of his increased business to the detour on John R St. that sent foot traffic around by his restaurant. During the period of excessive heat, Mr. Weber stated, his business was only a little better than normal.

He believes that his three ten-ton Universal cooling units probably did more toward keeping the store in "step" and retaining its customers than they did toward adding any new ones. He did say, however, that he had had his air-conditioning system for some time and would not be willing to go without it in order to test the possible reaction on the customers.

"Air conditioning is just one of the things a restaurant owner nowdays must provide," he maintains.

Advertises Air Conditioning

E. Bishop, manager of the Dixie Lee Tea Room, has large signs on display outside his downstairs restaurant advertising his Frigidaire air-conditioning system. No large decrease in business was noted during the heat wave, which fact Mr. Bishop credits to good food, plus the air conditioning. His logic is that he wouldn't go to a place with poor food even though it did have air conditioning; neither would he care to swelter in order to get good food, if he could find the two combined in one place.

"We probably would have had little or no business during that period if it hadn't been for the conditioning, especially in our downstairs position," he further commented.

The Bungalow Restaurant, a non-conditioned restaurant of the lunch-room type, suffered a business decrease of approximately 50%, the manager said.

No Downtown Traffic

Again at the Mayflower Doughnut Shop, a shop serving light lunches of three nationally advertised foods, the complaint was that during the heat wave there was no downtown traffic—in other words very little business to be had. J. E. Ballentine, manager of the shop, said that, in general, July business was exceptionally good. The first 20 days of that month, he estimated, business was 121% ahead of the same period of last year. During the heat wave, sales were 15 or 20% ahead of the equivalent period last year.

He gave only partial credit for the business increase to the Westinghouse air-conditioning system installed in June, however, because, he said, business was running anywhere between 60 and 70% ahead of last year before the system was put in. He did say that approximately half of the sales rise could be attributed to air conditioning.

Must Provide Conditioning

Of the well-known chain of 10 Stouffer restaurants, only one is not air-conditioned, the Detroit manager told us. To Stouffer's management, he said, it is not a question of business increase or decrease—air conditioning is a thing a restaurant must provide. "During the Detroit heat wave," he remarked, "business in non-conditioned restaurants stopped altogether, and ours almost stopped."

At Kartsen's Cafeteria, where the Frigidaire conditioning system has been complete since 1932, T. R. Kartsen said that receipts during July

(*Concluded on Page 13, Column 1*)

Good MOTOR PERFORMANCE *is Essential For Satisfactory Operation*

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Typical Speed-Torque Performance of Wagner Repulsion-Start-Induction Motor 60-Cycle 4-Pole 1-Phase

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Survey Shows How Retail Business Declined During Heat Wave in July

(*Concluded from Page 12, Column 5*)
6-11 were 4% over June 29-July 4, but 18% less than from June 22-27. The period between July 13-18, which included only two days of the intense heat here, increased over July 6-11 approximately 15%.

Soda fountain sales in all the seven stores operated by the Goody Nut Shops and De Wan's, both air-conditioned and non-conditioned, showed increases during the heat wave, and candy sales fell off. Three of the shops are air-conditioned with Carrier units, Joseph Benjamin, manager, reported.

July is the best month the shops have had since 1929, Mr. Benjamin stated.

"Naturally," he said, "our business would increase during the hot weather where restaurant business would decrease, because people weren't eating heavy meals; they wanted light lunches, which are our specialty."

He cited the case of the shop in the Dime Bank Bldg., which is not conditioned, but business of which increased 20-30% during the heat wave. However, he said, De Wan's, a shop operated by the firm on Washington Blvd., has been running approximately 10% more for being air-conditioned. In general, he attributes 10-15% of the business increase to air conditioning.

The success or failure of certain motion pictures has a great deal to do with this company's business, Mr. Benjamin declared. During the run of the motion picture, "San Francisco," the United Artists shop did the largest business it has ever done. From his office, he said, he can tell how the theaters are going by the sales in the shops near there.

"When the heat was playing havoc with Detroit," Mr. Benjamin related, "we couldn't keep the shops in such staples as coca-cola. They would be out of it for hours at a time before we could get an order ourselves and get it out to them."

Sam Kohen, manager of the Michigan Towel Supply Co., echoed the cry of the restaurants, by the report that although more towels came into his company during that period, napkin business showed about a 10% decrease because the customers were not patronizing white napkin—heavy food—restaurants.

Charles Dinger, of Sanders Confectionery, main office, said that July showed little difference in fountain sales, but a natural hot weather decrease in candy sales. At one of the air-conditioned branch stores Miss Winifred Busha, night manager, said that fountain sales had increased materially during that period.

Clothing Stores Suffer as Shoppers Stay at Home

Clothing stores for the most part were in agreement with the restaurant managers that decreased traffic was the principal cause for lessened sales receipts, although some stores reported increased sales of cool dresses.

At the Reja Dress Shop, a non-conditioned shop on Witherell St., Mrs. Rhea Landsberg said that business fell off approximately half, because no one was downtown; the streets were deserted. She said that she had shopped other stores and that there was no more traffic there.

At Cobbs, a Woodward Ave. store, also without air conditioning, the manager agreed with the theory that the heat kept persons indoors, resulting in sales losses.

H. M. Hersten, of Winkleman's, with five women's apparel stores in neighborhood shopping districts, stated that business starting the week after the Fourth and continuing through the first week of August was always the poorest of the season, so that the heat coming at that time made no material difference. This year, however, business was approximately 10% better than the period last year.

At the air-conditioned Peggy Ann dress shop on Woodward, the manager gave credit to the store's air-conditioning system for increased business during the heat wave.

Managers of gown shops located in the Washington Boulevard shopping area disagreed on downtown traffic and sales results during the recent hot spell, two air-conditioned stores reporting decreased sales, and two non-conditioned shops enjoying increased receipts.

The Marilyn Shop, another non-conditioned store, found business better than normal for the period. Inexpensive shantungs and other summer-fabric dresses went fast, Miss I. Price, saleswoman, reported.

In contrast, in the Kay Cooley sportswear shop on Griswold and Clifford, air-conditioned by Carrier, business was slower because persons didn't go shopping, Mrs. F. Guenther, manager, stated.

Drug Stores Show Gain In Soda Fountain Business

Most drug stores where sales increased at all found that the increase came in fountain sales. Mac's Cut Rate Drug Store, non-conditioned, of which F. J. Richards is manager, had approximately 20% increase in fountain sales, and a decrease in other sales of between 25% and 30%.

H. A. Hall, manager of Schettler's drug store on Woodward, found that sales fell off approximately 30% during the intense heat. He maintained, however, that the company's neighborhood stores took up the slack due to loss of downtown traffic.

Mr. Hall said that occassionally the store received complaints from customers who would prefer to shop in an air-conditioned store, and that the employes were always pleading for it. That it would help, he said, was indicated by the fact that the height of an employe's efficiency comes between Sept. 15 and Dec. 1, when the weather is invigorating.

Col. Gumpertz' Parrot Gets Air Conditioner But Is Unappreciative

DETROIT—Polly the parrot is no longer satisfied with a cracker. Unless she has air-conditioned quarters she won't talk, if you will listen to the story of Jerry, pet parrot of Sam W. Gumpertz, general manager of Ringling Brothers & Barnum & Bailey combined circus.

During the recent torrid spell while the circus was in Louisville, the temperature in Mr. Gumpertz's private car touched 110° F. for a three-day period. Jerry's 160-word vocabulary, usually adequate to meet any situation, failed him, and with panting tongue and drooping wings he maintained a stoic silence.

Ice Used by Parrot's Cage

Fearing that the parrot might be a heat victim, his owner had ice brought into the car and placed in front of electric fans close to Jerry's cage.

When the circus hit Detroit, Mr. Gumpertz got in touch with J. K. Knighton, air-conditioning sales manager of Kelvinator Corp., and arranged to have his private car air conditioned.

Jerry's Rest Interrupted

Because the circus was scheduled to leave for another town that night, the special air-conditioning installation had to be made in rush order. While the equipment was being installed Jerry become bored, and repeatedly hinted:

"Jerry wants to go to bed, boys."

Operating on d. c. electric current, the private car required a special room cooler with an air-cooled condenser type unit because water was not available. To supply air to the condenser, special window connections for the ducts had to be made, as standard parts could not be used.

Filling the order in one day meant that a special order had to be rushed to the Kelvinator factory, a truck secured, and a corps of engineers rushed to the car to install the cooler.

Despite the fact that all this activity meant a cool summer for Jerry, he persistently croaked out a sharp commanding "Good Night!"

Floor Unit Cools Circus Maestro's Car

Sam Gumpertz, general manager of Ringling Brothers & Barnum & Bailey Circus, had the Kelvinator self-contained floor-type room cooler shown at the right installed in his private car. The cage occupied by Jerry the parrot (see story in adjoining column) is at the left.

2 Private Offices Cooled By Frigidaire System

BARTLESVILLE, Okla. — Summer cooling was provided for two private offices of the Southwest Supply Co. here recently.

A 3-hp. Frigidaire unit, installed by W. C. Dance, Inc., of Oklahoma City, is used.

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Mechanical failure of expansion valves to function under varying conditions is, directly or indirectly, responsible for the great majority of service troubles.

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PAPERS AT INTERNATIONAL CONGRESS AT THE HAGUE SHOW TREND OF REFRIGERATION RESEARCH

Editor's Note: Reporting the proceedings of the Seventh International Congress of Refrigeration, conducted at The Hague, Holland, June 16-21, is not a simple task.

In the first place, comparatively few of the papers were delivered in English. German was the language of the majority of the presentations, with many others read in French.

Secondly, the papers were extremely technical. Some of the discussions (for example: "On the Lambda Phenomena of Helium;" "Homogeneous and Heterogeneous Orth-Para Interconversion of Hydrogen;") were totally beyond the scope of a business newspaper.

Third, each of the papers was quite long. Hence, the editors of the NEWS present herein condensed versions of those papers which they feel would interest readers of the NEWS most. More of these condensations will appear next week.

The editors feel that a brief survey of this material should be helpful in indicating to the American refrigeration industry the trend of investigations and experimentation being conducted by refrigeration technicians in other lands.

In the Sept. 9, Tenth Anniversary Issue of the NEWS will be published the complete original draft of the paper on "The Development of the American Household Refrigeration Industry" which was presented at the Congress by George F. Taubeneck, editor of ELECTRIC REFRIGERATION NEWS.

The same issue will contain also the following complete papers, each of which is of an historical-review nature:

"A New Standard of Rating Condensing Units," by Glenn Muffly; "Air Conditioning As an Industry in the United States," by William B. Henderson; "Advances in Quick Freezing During the Last Four Years," by Gardner Poole and M. T. Zarotschenzeff.

Platinum Resistance Thermometers

By W. H. Keesom and B. G. Dammers
Cryogenic Laboratory
Kamerlingh Onnes, Leiden

As a result of a discussion of the experimental basis on which the definition of the International Temperature Scale rests as far as low temperatures concerns, the Kamerlingh Onnes Laboratory did not feel itself justified to accept this scale. The authors constructed from wires of different origin a set of platinum thermometers, satisfying the conditions stipulated in the definition of the international temperature scale.

The oxygen point was taken at —182.983 °C, derived as an average of previous Leiden determinations, recalculated with recent values of the fundamental pressure coefficient and of the second virial coefficients of helium.

After calibration at the basic points: oxygen, ice, steam, and sulphur point, five platinum thermometers were compared with the helium thermometer between 0 and —183° C in a cryostat giving a constant and uniform temperature to within 0.002°. The readings of four platinum thermometers agree to within 0.01°, the fifth thermometer gives readings differing 0.03° at —138° C from those of the first mentioned set.

The international temperature scale lies for temperatures between 0 and —100° C below the thermodynamic scale to an amount of about 0.04° at —80° C. Between —120 and —183° C the international temperature scale lies above the thermodynamic scale.

Report of Committee on the Practical Refrigerating System and Test Code

By E. Altenkirch, Germany

The author, president of the committee of the I. I. F., on the practical refrigerating unit and the test code, forwarded to the members of this committee, with request for their advice, the report which was published as an Annex of the No. IV, 1932 issue of the *Bulletin* of the International Institute of Refrigeration.

Particularly complete replies were received from Japan and Poland.

The problem of the most suitable refrigeration unit has also been thoroughly discussed in the U. S. A.

With a view to the desired standardization, the various opinions expressed so far are critically discussed.

As to the procedure to follow further on, it is believed that the first aim should be to arrive at an agreement between all technical thermodynamicians—also those outside the refrigerating field—on the unit of time (second, hour) which is to be used for defining the international unit of heat or cold *production rate*. If the calory is retained as the basic unit for thermal measurements, the international refrigeration unit will then at once be established.

How this international unit will be called is a matter of secondary importance—though, curiously, many people overlooked for it the more essential question of the unit of time to be adopted—and needs no discussion until the above point has been decided upon.

Once these preliminary questions are settled progress can be made in the direction of a definite wording of the international test code which, according to the resolution passed at the Rome Congress, should be based on the actual test rules of the VDI-DKV, the wording of these rules not having given rise to any serious objections.

They will be completed by a number of rules on the testing of turbo-compressors, rules which are to be adopted following their general discussion.

Research on Crystal Structure of Solidified Gases

By W. H. Keesom and K. W. Taconis
Cryogenic Laboratory
Kamerlingh Onnes, Leiden

The Debye-Scherrer cameras used at Leiden in the investigation of crystal structures being calibrated usually by solid CO_2 exposures, it appeared desirable to redetermine the lattice constant of CO_2 with the greatest possible accuracy. This was effected by Keesom and Kohler, using the extrapolation method developed by Kettmann. Moreover, the expansion coefficient of solid CO_2 has been measured between 20 and 115° K. The results are:

$a = 5.540 + 4.679 \times 10^{-6} \cdot T^2$.

At —190°C $a = 5.572$ Å.

The reporters succeeded in obtaining single crystal diagrams of solidified gases by means of an X-ray goniometer with moving film, in which the crystals are rotated. The following crystal structures have been determined:

Ethylene, a rhombic structure, at —175°C:
$a = 4.87$,
$b = 4.14$,
$c = 6.46$ Å. With two molecules per unit cell, density 0.717.

γ-Oxygen, a cubic structure at —223°C:
$a = 6.83$ Å. With 8 molecules per unit cell, density 1.32.

Chlorine, a tetragonal structure, at —185°C:
$a = 8.56$,
$c = 6.12$ Å.
With eight molecules per unit cell, density 2.09.

Thermal Conductivity of Materials Used for Solid Carbon Dioxide Container

By Ezer Griffiths and J. H. Awbery
National Physical Laboratory
Teddington

The temperature difference between the inside and outside of a container used with solid carbon dioxide is so large (about 100° C.) that it is important to construct it of material with a low thermal conductivity.

The conductivities of expanded rubber, balsa wood, and two grades of cork have therefore been measured between hot face temperatures of about 6° C. and cold face about —61° C. In order to estimate the temperature coefficient of the thermal conductivity, observations have also been made with hot face between 30° and 50° C., and cold face about 20° C.

In both cases the material was used in the form of a box, lined with metal in order to ensure uniformity of temperature over the faces. At the lower temperature, the heat flow was deduced from the rate of sublimation of a block of solid CO_2 contained within it, whilst for the higher temperature, an electrical heater was inserted.

For the particular materials studied it is found that the conductivity depends mainly on the density of the insulator, and, in fact, a fair approximation is to take it as a linear function of the cube root of the density.

The actual results are shown in the table below.

Material	Lbs. per c. ft.	Thermal conductivity at — 27° C. (c. g. s. units)
Expanded rubber	5.4	0.00006_7
Balsa wood	6.3	0.00007_8
Cork	6.7	0.00007_9
Cork	10	0.00008_2

Viscosity of Some Liquid Refrigerants

By J. H. Awbery and Ezer Griffiths
National Physical Laboratory
Teddington

The viscosities of sulphur dioxide, ethyl chloride, methyl chloride, cis-dichloroethylene, trans-dichloroethylene, trichloroethylene, and dichlorodifluoromethane, have been measured at temperatures between —15° and +30° C., and the results are shown in a table.

The method used is that of timing the rate of fall of a closely fitting plug in a vertical tube filled with the liquid. In order to avoid evaporation, with the resultant formation of bubbles, an auxiliary reservoir of the fluid was connected with the experimental tube; the refrigerant in the reservoir was maintained at a temperature slightly above that of the tube, so that the pressure in the apparatus was above the vapor pressure of the liquid in which the plug moved.

In all cases the viscosity n follows a law $n = A\ e^{a}/T$ where T is the absolute temperature and A and a are constants.

Thermal Properties of Methyl Chloride-Mineral Oil Mixtures

By A. Perlick, Kaltetechniches Institut, Karlsruhe

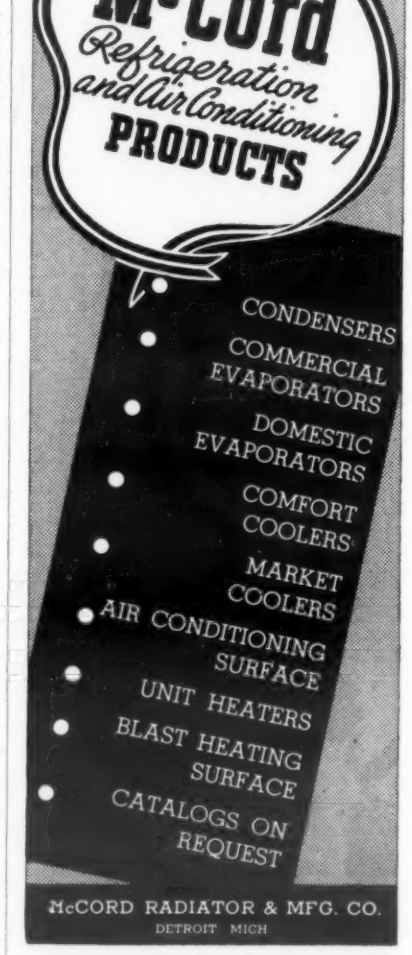
The thermal properties of the more common refrigerants in the pure state are known with sufficient accuracy, but the practical value of this knowledge, as applied to refrigerating compressors, is limited when the refrigerant dissolves lubricating oil, since this may sensibly change its properties. Sulphur dioxide has a dissolving capacity which is strongly dependent on temperature and its miscibility range is restricted, whereas Freon is miscible in all proportions with mineral lubricating oil.

For investigating the properties of methyl chloride-oil mixtures, vapor pressure measurements were made for various concentrations, and at three different temperatures.

The results show that mineral lubricating oil is completely and ideally (no solution heat) miscible with methyl chloride. The higher the viscosity of the oil, the less important the lowering of the vapor pressure it produces. This fact can be made use of, taking account also of the ideal behavior of the mixtures, for evaluating the average molecular weights of the oil. With increasing oil content, the vapor pressure decreases slowly at the outset and then more and more rapidly.

This complete miscibility has its significance for the operation of methyl chloride refrigeration plants. The pressure and temperature at the evaporator will not be constant unless the composition of the liquid refrigerant-oil mixture remains constant. With small refrigerating units, in which considerable oil accumulation in the evaporator may occur, it may be required to make allowance for fairly sensibly lowered vapor pressures, which should be duly considered in design calculations.

The refrigerant-oil miscibility also affects the operation of the compressor in that the viscosity of the oil is considerably reduced. From measuring of the suction pressure and the oil temperature in the crankcase, the concentration of the mixture can be evaluated and its viscosity estimated.



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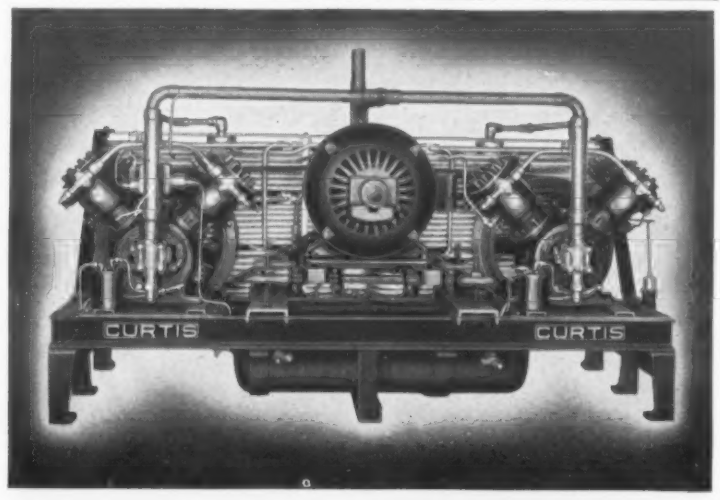

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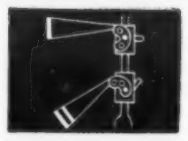

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COMMERCIAL *Service Manual*

By K. M. NEWCUM

This is the second instalment of the COMMERCIAL SERVICE MANUAL, which is being published in serial form in ELECTRIC REFRIGERATION NEWS and which will later be published as one of the books of The Refrigeration Library.

The first instalment, which appeared in the August 5 issue of the NEWS, was really the start of Chapter 3 of the COMMERCIAL SERVICE MANUAL, the first two chapters (dealing with fundamentals of refrigeration) were omitted because that subject has been covered frequently in ELECTRIC REFRIGERATION NEWS.

This article, a continuation of Chapter 3, explains the proper handling of refrigerants and will be continued in the next issue.

Types of Cylinders and Valves Used for Refrigerant Storage

Figure 1 shows the types and sizes of cylinders supplied by Ansul Chemical Co. The chart gives all the dimensions, tare weight and gross weight when filled with SO_2 or methyl chloride. The valve outlet thread specifications are also shown in the chart.

Note that dimension "A" is taken from the bottom of the cylinder up to the top but does not include the neck ring. This is the standard method of determining the height of any refrigerant cylinder.

It might be well to point out at this time that the I.C.C. requirements for SO_2 cylinders are a 600 lbs. test pressure, or I.C.C. 3A300, 3B300, 4A300 or 4B300; while methyl chloride and Freon cylinders require only a 300 lbs. test pressure or I.C.C. 3A150, 3B150, 4A150, 4B150.

Methyl chloride and Freon may be shipped in cylinders having a higher test pressure than 300 lbs. or in this case a 600 lbs. test pressure cylinder made for SO_2. The Bureau of Explosives, however, will not approve the use of cylinders having a test pressure of less than 600 lbs. for SO_2.

It is common practice for refrigerant manufacturers who manufacture both SO_2 and methyl chloride to specify all their cylinder equipment manufactured to conform with the 600 lbs. test so that they may be used for either refrigerant.

Figure 2 shows the several sizes and types of cylinder valves supplied in Ansul cylinders.

Valve No. 224 is used on Ansul types S, C, D, M, MS, MC and MD cylinders. The cylinder thread is ¾-inch male taper pipe, 14 threads per inch, ¾-inch taper per ft. The outlet thread is ½-inch male taper pipe, The valve is fitted with a fusible metal plug to melt at 165° F.

The valve is of the packed type and the packing may be tightened by turning the 1⅛-inch hexagonal packing nut clockwise. The stem is ¾-inch square for wrench operation. Stillson wrenches and misfit wrenches should not be used on any valve stem.

Valve No. 81 is of the packed type for use on smaller cylinders. As noted, it is not equipped with a fusible metal safety. The cylinder in which this valve is used is equipped with a fusible plug (See Figure 1, types A, MA, T, and MT). The valve packing may be tightened by holding the packing nut with one wrench and turning the lock nut clockwise with a second wrench, then turning the packing nut clockwise. After packing nut is in place it should be locked by backing the lock nut into place. Note that the valve stem is provided with a shoulder which prevents it from being screwed out of the valve. It is ¼-inch square for wrench operation.

Valve No. 5 is of the packed type, and the packing may be tightened by turning the packing nut to the right. The stem is 3/16-inch square for wrench operation. Note that the stem is not provided with a shoulder or stop, and it should not be opened over two or three turns in normal use.

The fusible metal plug shown in Figure 2 is machined on a taper near the top to provide a support for the fuse metal. Before the fuse metal is put into place the brass shell is tinned with a flux and fuse metal—then the fuse metal is run in like solder so that there is a definite bond between the fuse metal and brass shell.

Users of this equipment are warned not to tamper with the safety devices in any way at all. Should a leak develop around the fuse metal, the cylinder should be returned to the owner, not repaired by the user.

Virginia Smelting Co.'s SO_2 and methyl chloride cylinders are shown in Figures 3, 4, 5, and 6. Note in Figure 3, type "A" cylinders, type AS (seamless) weighs empty approximately 120 lbs. while type AW (welded) weighs empty approximately 75 lbs. This 10-inch x 48-inch cylinder has an SO_2 capacity of 150 lbs. and a methyl chloride capacity of 90 lbs. Fuse plugs are provided in the valve and in the bottom of the cylinder.

Type "C" cylinders, 7 inches x 28 inches, are shown in Figure 4. The seamless cylinder weighs approximately 55 lbs., while the welded weighs approximately 28 lbs. The SO_2 capacity is 35 lbs. and the methyl capacity is 20 lbs. A fuse plug is provided in the valve and also in the bottom of some of the cylinders.

Type D cylinders, (Figure 5), 4x22 inches, are all of the welded type and have an empty weight of approximately 11 lbs. The valve is equipped with a fusible metal safety.

Virginia type "E" (Figure 6) 4x11-inch cylinders weigh approximately 5 lbs. empty. They hold 5 lbs. of SO_2 and 3.5 lbs. of methyl chloride. The valve is supplied with fusible metal.

Figure 7 shows the packed type Virginia cylinder valve used on types "A" and "C" cylinders.

The packing may be tightened by tightening the two machine bolts on each side of the packing nut flange. As shown in the illustration, the fuse plug is filled with 165° F. fusible metal. The valve outlet is ¾-inch *straight pipe thread*, 14 threads per inch. It might be well to point out that many users do not recognize this as being a *straight* pipe thread and use a standard taper pipe thread fitting to reduce the outlet down to SAE sizes. By putting a taper pipe fitting over a straight pipe thread, a poor joint is obtained and considerable damage is done to the valve thread.

(Concluded on Page 16, Column 3)

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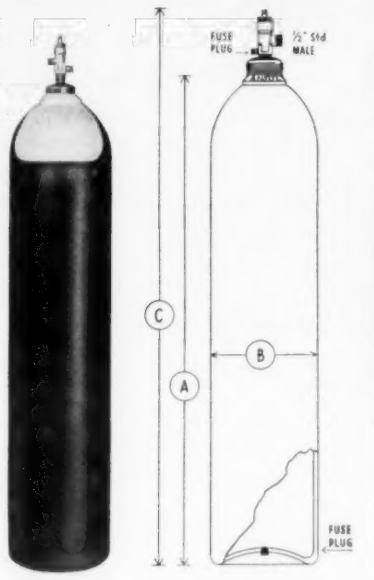
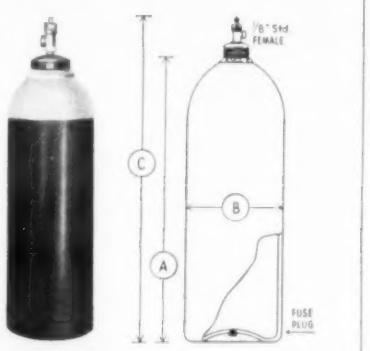
Figure 1—Ansul Cylinders



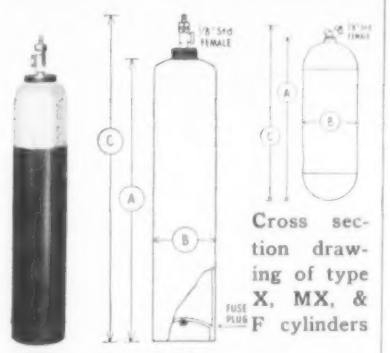
Type S
Type MS

Sketch of Types S, MS, M, C, MC, D, MD.

Type M — Type C, Type MC — Type D, Type MD



Type A and MA Cylinder



Cross section drawing of type X, MX, & F cylinders

Type T and MT

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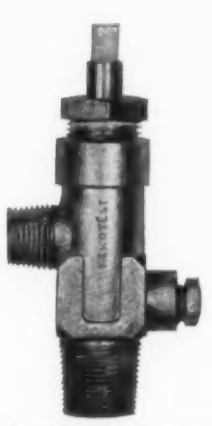
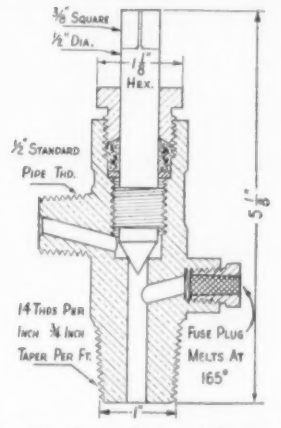
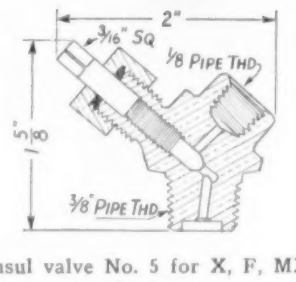
Figure 2—Cylinder Valves Used by Ansul

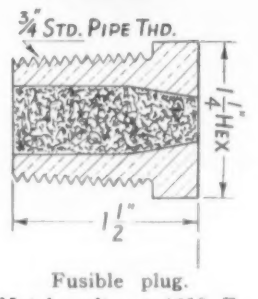




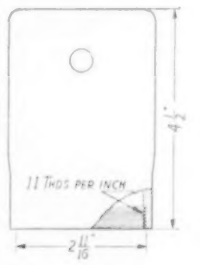
Ansul valve No. 224 for types S, C, D, M, MS, MC, and MD cylinders.



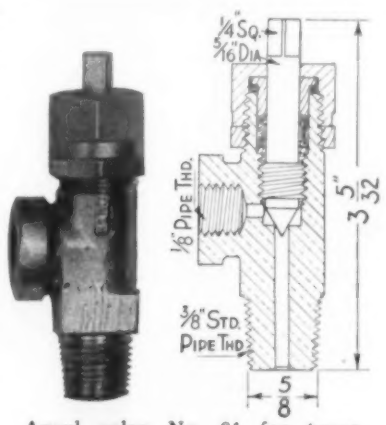
Ansul valve No. 5 for X, F, MX cylinders.



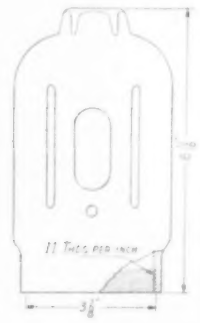
Fusible plug.
Metal melts at 165° F.



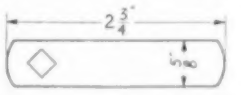
Valve protection cap.



Ansul valve No. 81 for types A, T, MA, MT cylinders.



Valve protection cap.



Wrench supplied with Ansul valves 81 and 5.

Table 1—Sizes and Capacities of Ansul Cylinders

Type	Sulphur Dioxide Weights (pounds) Capacity SO_2	Tare	Gross	Dimensions (inches) A	B	C	Type	Methyl Chloride Weights (pounds) Capacity CH_3Cl	Tare	Gross	Valve Outlet Thread Std. I. P. S.
..	...	...	...	47	12	53	M	130	85	215	½" Male
S	150	110	260	48	10	54	MS	90	110	200	"
C	100	50	150	34	10	40	MC	60	50	110	"
D	70	38	108	38	8	44	MD	40	38	78	"
A	25	23	48	20	6	26	MA	15	23	38	⅛" Female
T	10	10	20	19	4	24	MT	6	10	16	"
X	5	4	9	12	4	13½	MX	3	4	7	"
F	2½	2½	5	6	4	8	...	...	...	...	"

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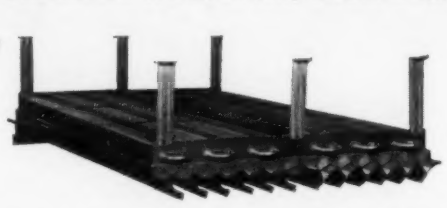

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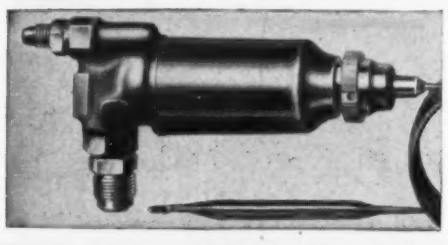

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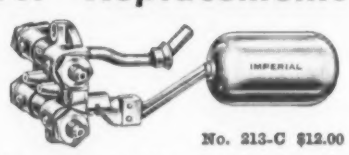

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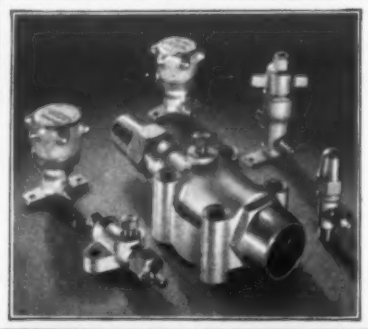

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Sizes of Cylinders Used for Shipment Of Refrigerants

(*Concluded from Page 15, Column 2*)

Virginia Smelting Co. carries in stock a complete assortment of fittings for reducing this outlet down to almost any size or type of connection desired. Refrigeration supply jobbers can supply adaptors in the sizes shown in Figure 8, which are especially made to fit these cylinder valve threads. It is recommended that only fittings made for this purpose be used to the exclusion of all other misfit connections.

Figure 9 shows the diaphragm packless valve for types "A" and "C" cylinders. The outlet and fusible plug specifications are the same as the packed type.

The diaphragm packless construction precludes the possibilities of leaks around the stem and makes it unnecessary to give any attention to the valve in the field.

The operation of the diaphragm packless valve differs from the packed type in that it requires only one to one and one-half turns to completely open the valve. When the valve is cracked off the seat, it operates more easily than the packed type, as there is no packing to bind the stem in operation.

In type "D" cylinders the valve shown in Figure 10 is used. It is of the packed type. The stem is 3/16 of an inch square for wrench operation. The valve used on type "E" cylinders is of the packed type.

Virginia Smelting Issues Wall Chart of Pressure Temperature Curve

WEST NORFOLK, Va.—Virginia Smelting Co., manufacturer of methyl chloride and sulphur dioxide, has just brought out a large wall chart, available to dealers and service men through any of the company's regular distributors, of pressure-temperature curves for various refrigerants in common use.

The chart lists pressure-temperature readings for ammonia, dichlorodifluoromethane (Freon-12), methyl chloride, sulphur dioxide, and methylene chloride (Carrene).

Persons unable to obtain charts through their jobbers may write direct to Virginia Smelting Co., West Norfolk, Va.

Spangler Operating Branch In New Orleans Under Direction of Boyd

NEW ORLEANS—The Spangler Co., wholesale distributor of refrigeration and air-conditioning parts and supplies with headquarters in St. Louis, is operating a branch office here under the management of C. H. Boyd, formerly with Alco Valve Co., St. Louis.

The move was made, according to President R. H. Spangler, to enable the company to give efficient service to dealers and service men in both the New Orleans and St. Louis territories. Spangler's new catalog, listing its complete stock of parts and supplies, has just been issued and is ready for distribution.

The company carries a complete stock of air-conditioning pipe, copper pipe, and copper fittings, it has announced. Air-conditioning pipe is capped at both ends to insure its cleanliness; copper fittings are carried in all sizes up to 4 inches, and copper pipe in the same size range in government specification types "L" and "M."

Perfex Announces Eight Representatives for Line Of Control Equipment

MILWAUKEE — Perfex Controls Co., manufacturer of automatic controls and control systems for heating, air-conditioning, and refrigeration equipment, recently appointed eight territory representatives to handle the sale of its controls in leading cities.

Outlets appointed are: Shepherd Barnes, vice president in charge of eastern territory, 202 E. 44th St., New York City; C. Ellis Hayes, manager, Philadelphia division, 3701 N. Broad St., Philadelphia; Charles B. Soper, manager, New England division, 1313 Clarendon St., Boston; Allen Butler, manager, mid-western division, 500 N. Dearborn St., Chicago; W. W. Boes, Mutual Home Building, Dayton; E. Harold Clark, 600 Michigan Theater building, Detroit; P. J. O'Meara Co., 500 Hawthorne St., San Francisco; and O. E. Lewis Co., 732 Camp St., New Orleans.

W. R. Miller, formerly with the Chicago office of Minneapolis-Honeywell, is in charge of the Perfex field research engineering department.

Virginia Smelting Valves and Cylinders

Fig. 3—'A' cylinders.

Fig. 4—'C' cylinders.

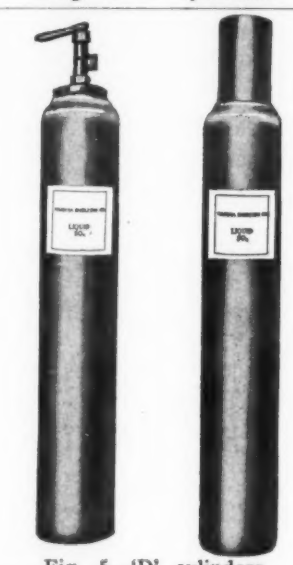


Fig. 5—'D' cylinders.

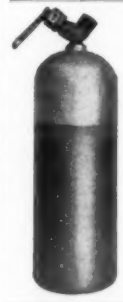
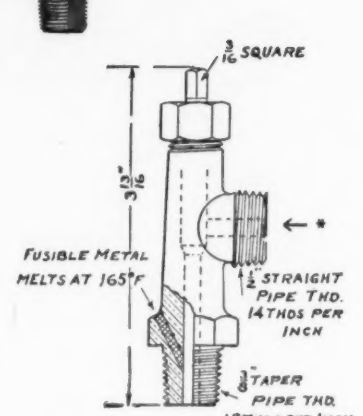


Fig. 6—'E' cylinders.

Fig. 10—Valve for type D cylinders.



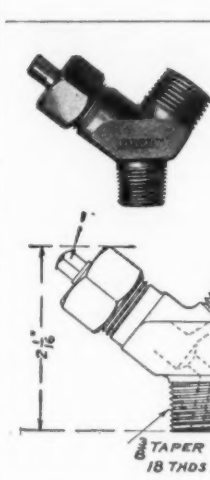


Fig. 11—Valve used on type E Virginia Smelting cylinders.

Adapter

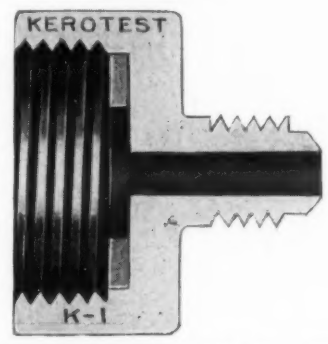


Fig. 8—Kerotest adapter for reducing size of opening on large gas drum valves to use copper tubing. The adapter sizes are ¾" straight pipe (female thread to ¼" O. D. tube, ¾" to ⅜", ¾" to ½", and ⅜" taper pipe to ¼".

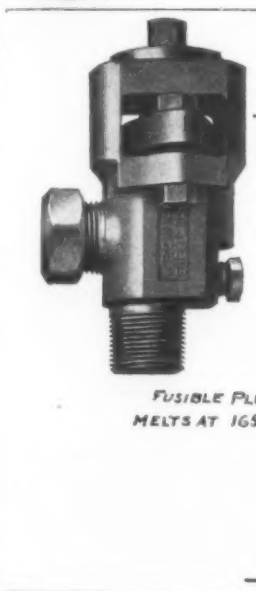


Fig. 7—Packed type Virginia Smelting valves for types A and C cylinders.

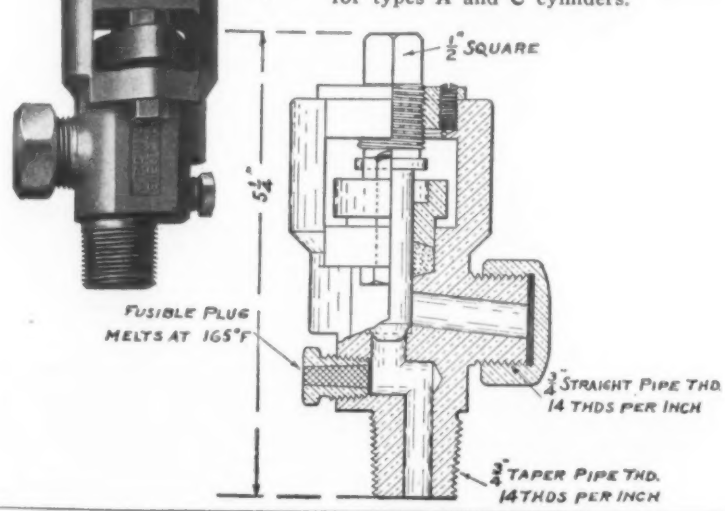
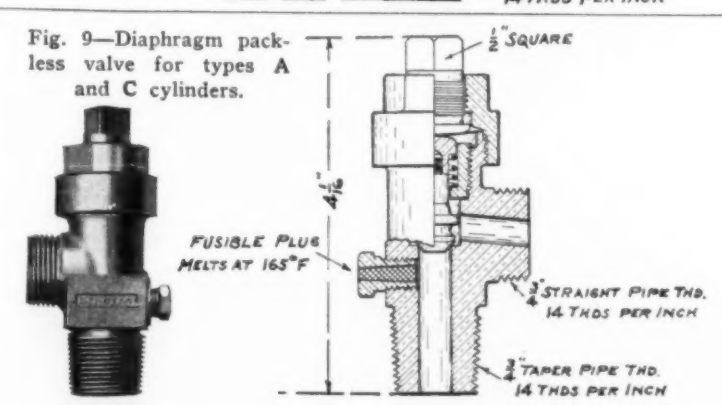


Fig. 9—Diaphragm packless valve for types A and C cylinders.



Air Conditioning

Ilg Manual Gives Simplified Methods of Planning, Installing and Servicing Air-Conditioning Equipment

CHICAGO—Under the title, "Simple Instructions for Estimating Cooling Systems," Ilg Electric Ventilating Co. has produced a simplified, practical manual covering problems in the planning, installing, operating, and servicing of comfort cooling equipment.

The "instruction book" divides itself into two parts—(1) calculation of heat loads and (2) installation, testing, and service methods.

Application of Psychrometric Chart

The book opens with a concise description of air conditioning, following which is an explanation of the use of the psychrometric chart. The following simple explanation is given of the steps used in making application of the chart:

(1) To find the relative humidity when the dry bulb and wet bulb temperatures are known, find the dry bulb temperature on the horizontal base line, follow this line up to its intersection with the wet bulb line, which either slopes or curves downward to the right, and then read the relative humidity on the line which either slopes or curves upward to the right. For instance, find 80° F. and note that it intersects the 70° F. wet bulb line at 61° dew point temperature.

(2) To find the dew point temperature when the wet and dry bulb temperatures are given, find the intersection of the wet and dry bulb temperatures, as before, follow the horizontal line toward the left and read the dew point temperature. For instance, 80° dry bulb and 70° wet bulb, as in the previous example, shows a 65° dew point temperature.

(3) To find the total heat in the air, find the wet and dry bulb temperatures, as before, follow the wet bulb downward to the right, and read the total heat in B.t.u.'s.

Factors Involved

Under the general heading of "How Air Conditioning is Accomplished" Ilg's book discusses the four factors which are necessary in air conditioning. First of these considered is "change or air motion" or "positive ventilation."

For this purpose, it is explained, there are various arrangements of fans which are broadly classified as either propeller type or centrifugal type. The first type is generally known as an exhaust fan, because of the fact that its principal function is to exhaust or remove the spent air from a given space without duct work and allow the atmospheric pressure to force in a new supply of "fresh" air.

Second type is usually called a "blower" because the air handled is "blown" through a duct to the conditioned area.

System Characteristics

Discussed in some detail with the aid of the chart and a blower is the factor in the application of the blower known as the "system characteristic." This characteristic is graphed in the form of a parabola running from zero pressure and volume, through the intersection of the horizontal static pressure line and the vertical volume line according to the pressure of the system. It is based upon the law that the volume varies directly with the speed of the blower and the pressure with the square of the speed.

Value of the curve, the book points out, lies in the fact that the operating condition of the system at any other blower speed is bound to fall on this parabola; and if more or less air is required, it is a simple matter to determine the new operating speed.

Change of Heat Content

Second matter to be considered in "How Air Conditioning is Accomplished" is the change of heat content of the air. This of course includes both heating and cooling, but the Ilg booklet discusses cooling only, pointing out that the subject of heating has been pretty generally reviewed.

The discussion of mechanical refrigeration is in considerable detail; particular attention is given to the matter of controls.

Next major subject considered is the basis of cooling load calculations. The problem is stated in the following simple manner:

"When we think of air conditioning and in particular that phase of summer air conditioning that to many seems so important—namely, cooling—we picture the removal of heat from within some enclosed space occupied by human beings. The mere fact that we are removing some heat means that this space will be at a lower temperature than its surrounding space, and thus heat will tend to flow into it.

"Similarly so, but much less apparent at the outset, to insure comfort moisture also must be continuously removed, for moisture tends to flow from areas of high concentration to those of lower, and so to more uniformly distribute itself.

"Then too, there are many things within an enclosure, such as people, that generate and give off heat and moisture in such quantities that although the space should be perfectly insulated against the inward flow of heat and moisture (admitting for the present that such be possible), the temperature and wetness of the atmosphere would be increased to a point where the occupants would be conscious of personal discomfort. . . .

Comparison of Two Jobs

"However, before we can jump at any conclusions and set down some such rule as 'for each cubic foot of space that is to be cooled a certain tonnage will be required,' let us first picture two places in which cooling for comfort is desired.

"No. 1 is a busy downtown restaurant located on a hot, crowded street. It is noontime, and a few hundred people are all trying to enjoy a hurried lunch comfortably at about the same time. Picture also coffee urns, the steam tables, toasters, ranges, and half a dozen other heat and moisture producing devices all operating at capacity.

"Contrast this with a lawyer's private office up several stories on the shady side of a modern office building. Here two or three people are going about their duties in a less hurried manner, and are expending considerable mental but very little physical effort.

Factors to Be Considered

"Obviously, from these two pictures, a cubic foot of space is not the basis by which estimates of the capacity of cooling equipment may be made. Apparently the walls that envelop the space must be considered, the materials of their construction, their thickness; the temperatures, the sun, windows, openings, and other physical data. Likewise, consideration must be given to the number and the activity of occupants, and the heat and moisture producing units contained within the enclosure."

With the problem thus set forth, Ilg's book next goes on to discuss how such data are to be obtained. In dealing with this part of the air-conditioning job, Ilg engineers add their contribution to the considerable and widely varying engineering literature on the subject of inside design conditions. Because it is a distinct contribution, the discussion is worth quoting:

Inside Conditions

"Now to arrive at inside conditions of temperature and humidity for design purposes. These the Chicago Master Steam Fitters Association set at 80° F. and 55% relative humidity in their standards for certified air-conditioning installations, and which, of course, must be followed in order for this organization to accept a proposed system as certified by them.

"However, by looking deeper into this subject of inside temperatures and humidities, we can discover some startling facts that should be borne in mind if we desire to have our systems perform satisfactorily. One of these factors is acclimatization, or man's ability to adapt himself to changes in air conditions. Another is the physiological effects that air conditions have on him.

Temperature Differential

"Research work on these subjects has indicated that when a person is exposed to a low temperature for a length of time he will so become accustomed to it that although he experienced a sensation of 'coldness' at the beginning and comfort later on, he would feel that the room were too warm if he were in it a sufficient length of time and the temperature were not excessively below that to which he had previously been exposed.

"In general, the results indicated that for occupancy for periods of time less than half an hour, comfort could be secured by a temperature eight degrees lower than the space from which the person came, while for periods of occupancy over an hour a temperature at least 14 degrees lower would be required. In no case, however, would it seem good practice to provide for a temperature difference of less than six degrees or greater than 20 degrees.

Effect of Relative Humidity

"No mention was made of the effect of relative humidity from the standpoint of length of time of occupancy. The American Society of Heating and Ventilating Engineers Guide, too, is a bit vague on this point, stating that relative humidity should be low (about 50% or less).

"Attention is called also to the fact that people in warmer climates lack the ability of adapting themselves to temperature changes as readily as do those of the cooler zones. This should not be overlooked. At the present time much work on this subject is being done by medical and other groups, so in the future

(*Concluded on Page 16, Column 3*)

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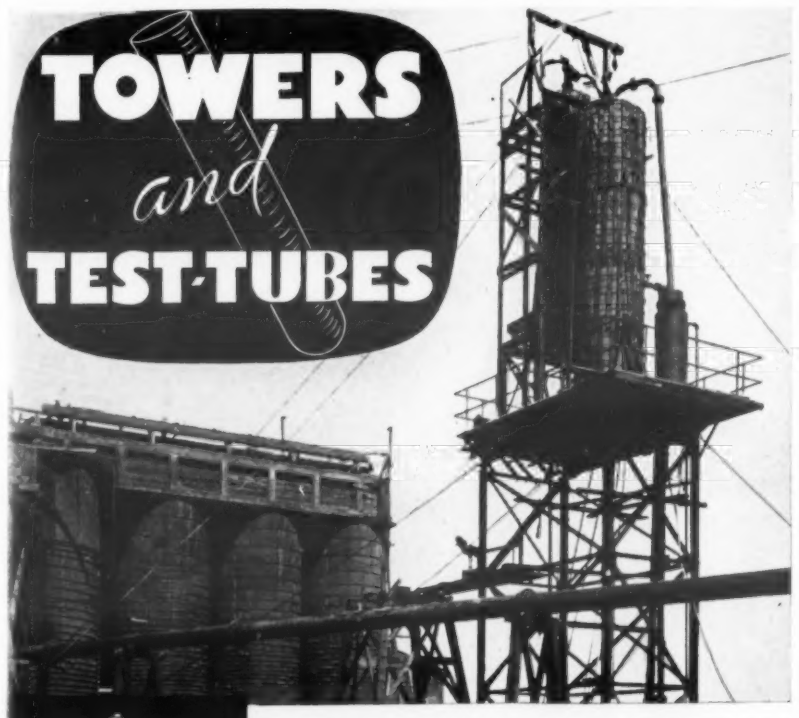

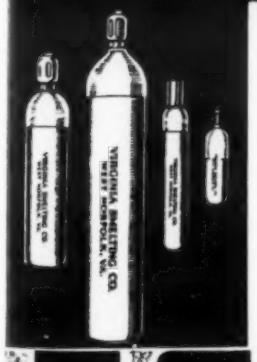

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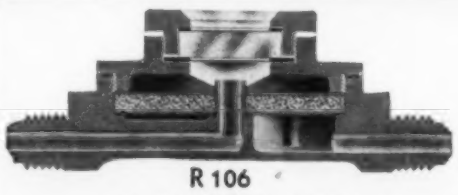

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Suggestions for Installation of Cooling Units in Air-Conditioning System Are Made in Ilg Book

(*Concluded from Page 17, Column 3*)

we should see more definite standards for inside temperatures.

"To summarize: in absence of better information use 80° F. dry bulb and 55% relative humidity as the inside conditions, or a temperature drop of not less than 6° F. or more than 20°, bearing in mind that greater drops should be provided for as the time of occupancy increases.

"Don't forget that these are design temperatures on which we are going to base calculations and not the temperatures which will be maintained within the structure. These maintained temperatures are a matter of controls and operation and need not concern us at this time. Nevertheless, it is a good plan to include the following table as taken from the Guide:

Desirable Indoor Air Conditions in Summer Corresponding to Outdoor Temperatures, Applicable to Exposures Less than Three Hours

Outdoor Temp.	Dry Bulb	Wet Bulb	Effective Temp.
95	80	65	73
90	78	64.5	72
85	76.5	64	71
80	75	63.5	70
75	73.5	63	69
70	72	62.5	68

Consideration is given also to such factors in heat load calculations as allowed for solar radiation of roofs and walls (with comprehensive data on transmission coefficients for walls, roofs, etc.), outside design conditions, and heat generating appliances. Photostatic copies of Ilg-Kold air-conditioning survey sheets are shown.

Installation Practice

Next section of the book covers installation practice, and offers a number of valuable suggestions for installers that should result in trouble-free systems, if the suggestions are followed. Some of them:

"Locate the condensing unit as near as possible to the cooling unit, and with consideration of the water supply and drain facilities.

"The compressor should be located in a freely accessible place which is adequately lighted and ventilated, and should be protected against mechanical injury by heavy metal screens. The unit should be securely fastened to a heavy wooden base which is bolted to the floor. Where quietness is desired it is advisable to use two or three inches of cork or other noise-insulating material between the wooden base and the floor.

Cooling Unit Location

"Cooling units should be located according to the layout, but for convenient inspection or cleaning should not be installed in inaccessible places or over permanent display cases or counters. Units should be hung securely and level, and should not depend upon the tubing to carry them or upon weight or strain to keep them in proper alignment . . .

"After the condensing unit and the cooling units have been installed, the copper tubing, which is supplied in 20-ft. lengths, must be cut to proper length.

Sealed Tubing Is Best

"The tubing should arrive on the job sealed against dirt and moisture, and should be kept sealed until such time as each piece is to be used. When handling this tubing extreme care must be taken to keep it free from all dirt such as sand, dust, solder, chips from the use of tools, moisture, or any other foreign matter. Kinks, sharp mends, burrs from tools, or mechanical injury also should be avoided.

"Anything causing restriction to the flow of the liquid refrigerant or its vapor will cause detrimental resistance to the flow and may be difficult to locate or repair. All foreign substance in the tubing will travel with the flow and may lodge in any of the several valves and prevent its proper functioning, or may be drawn into the compressor where it can destroy the valve mechanism or bearings."

The following recommendations are suggested as good practice in making refrigerant tubing fittings:

"The outside of the tube and the inside of the fitting must be polished with fine steel wool or sand paper, so that the metal surfaces to be sweated together are bright and clean, care being used to see that none of the cleanings drop into the tube. Do not use a file, as it will score the metal surface.

"Put a thin coat of flux on the cleaned portion of both the fitting and tube. After the fitting is placed on the tube remove any excess flux that shows outside the fitting.

"As the joint is being heated apply wire solder and at the right temperature a drop of solder will melt from the wire. As the joint absorbs more heat, solder will be drawn into the joint by capillary attraction. When the line of solder shows completely around the edge of the joint, the connection is complete. All surplus solder should be removed from around the edges with a small brush. This operation will show whether or not the solder has filled the joint.

"Both solder and flux should be used sparingly. When properly used only a small amount is required to make a tight joint. Any excess amount may run or drip into the fitting or tubing and enter the system.

"Where threaded fittings are used special sealing compound for refrigerating work should be used. The compound must always be applied to the external thread. This will allow all the excess compound to work to the outside of the connection rather than be pushed into the fitting."

Other recommended installation practice:

"In running refrigerant lines it is well to allow a slight slope toward the compressor in the horizontal lines, and all valves or accessories should be in accessible places . . .

"It is advisable to install a hand valve just ahead of the condenser for service purposes, and to use a strainer where there are indications of rusty pipe or foreign substance in the line . . .

"An open drain should be provided for the condenser water discharge line. This is according to most code rulings and prevents the possible contamination of the water supply, and also provides a point where the flow of water can be checked on service work."

Testing System

On the matter of testing a system before putting it into operation, Ilg's book has the following to say:

"The liquid supply line having been connected to the closed discharge valve of the receiver of the condensing unit, and the end of the vapor return to the closed intake valve of the compressor, the system is completely closed. The liquid line and the return line should be detached from these valves and, because the test pressure closes the expansion valve, both lines should be connected together and to a drum of nitrogen or dry carbon dioxide.

"Do *not* use OXYGEN as a substitute for these two test gases as an explosion will result if the oxygen comes in contact with oil or grease.

"The drum containing the nitrogen or dry carbon dioxide should be equipped with a pressure reducing valve to prevent higher pressure than desirable entering the lines. A pressure gauge should be connected to a ¼-inch line leading from the drum to the system for checking pressures.

"By slowly opening the pressure reducing valve on the drum connection, the complete system of tubing and cooling units is put under pressure. A pressure of 100 to 125 lbs. (or whatever is specified in the local code) should be built up in the system for a few minutes and the drum valve then closed. Watch the reading on the pressure gauge for a few minutes to make sure that there is no drop in pressure. If the pressure drops, it indicates a leak in the system.

"The system should be left under pressure while all joints or points of possible leakage are cleaned of oil and grease, painted with a liquid soap or thick suds and watched for bubbles which would indicate where the leak is. A flashlight and a mirror are a help when testing for leaks.

"If a leak is found the drum valve should be closed and the drum disconnected from the system so that the pressure will be reduced to that of the atmosphere. Repair the leak and re-test as before until the system becomes leak proof.

"The electric solenoid valve in the liquid line from the receiver must be held open electrically during the test, and all other valves in the line except the expansion valve should be opened to allow the test gas to fill the entire system. (Do not open any of the condensing unit valves). This test, faithfully made, will result in an absolutely tight system, but it must not be done carelessly.

"When you are satisfied that the system is free from the slightest leak, the test drum valve should be closed and the test gas should be allowed to discharge slowly while the drum is being disconnected from the line. The ends of the tubes should be reconnected to their respective valves.

Final section of the book is devoted to a discussion of service problems and methods on mechanical refrigeration units.

Ilg officials state that copies of the book, as well as Ilg's new air-conditioning catalog No. 436, will be furnished to readers upon request.

BUNDY ANSWERS:

1. The Smithsonian Institute
2. A lake in Florida
3. ± .003"
4. A pitch with nothing on it.
5. A prehistoric dinosaur

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REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

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EXCEPTIONAL OPPORTUNITY as district sales manager with nationally known electric refrigeration manufacturer. Consideration will be given men with experience contacting distributors of electric refrigeration, radio or appliances; or man who is holding position as sales manager for an appliance distributor. Full particulars regarding experience, references and compensation expected must be given in first letter. Box 824, Electric Refrigeration News.

POSITIONS WANTED

SALES AND SERVICE ENGINEER with thirteen years of experience, having been granted claims on new type of condensing unit, wishes connection with company which would be interested in same. Would be willing to take small salaried position during development. Patent arrangements can be made later. Box 823, Electric Refrigeration News.

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Questions

Product Information On Air Conditioning

No. 2877 (Dealer, Georgia)—"Kindly send me all available news and information on air conditioning such as different makes, prices and companies. Also please advise which is the best seller. I am especially interested in small portables."

Answer: We think that you will find most of the information you desire in the July 29 issue of ELECTRIC REFRIGERATION NEWS, in which were published specifications of both summer and winter air-conditioners. Prices given in many cases. Price of this issue is 25 cents per copy.

For a complete listing of manufacturers of air-conditioning equipment, classified by type and function, see the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Cork Insulation

N. 2878 (Service Company, Cuba)—"We are very much interested in selling a line of cork and accessories for refrigeration, such as cork tubing, waterproof cement for cork pipe joint, asphalt, cork sheets, etc., and we will appreciate it if you are kind enough to place us in direct contact with reliable manufacturers who are not already represented in this market.

"We understand that Victor and Armstrong are already represented and therefore you should not apply to them.

"Any other line that you may have available for this territory on refrigeration will also be considered by us."

Answer: Try Cork Insulation Co., 155 E. 44th St., New York City.

List of Manufacturers

No. 2879 (Distributor, Kansas)—"Appreciate it if you would give us a complete list of firms that make air-conditioning equipment. Also combined air-conditioning and heating equipment."

Answer: Consult the July 29 issue of ELECTRIC REFRIGERATION NEWS, in which were published complete specifications of leading makes and models of all types of air-conditioning equipment. Copies of this issue are available at a cost of 25 cents.

Florist Cabinets

No. 2880 (Distributor, Iowa)—"Will you please furnish us the name of several manufacturers who are making all sizes of florist cabinets. We are particularly interested in the manufacturer whom we heard of in Chicago who is specializing on these cabinets."

Answer: We do not know of a Chicago manufacturer specializing in florist cabinets, but the following manufacturers may supply your needs:

Seeger Refrigerator Co.
Arcade Wells & Whitehall Sts.
St. Paul, Minn.

Allied Store Utilities Co.
2401 N. Leffingwell Ave., St. Louis.

Holcomb & Hoke Mfg. Co.
1545 Van Buren St.,
Indianapolis, Ind.

McCray Refrigerator Sales Corp.
Kendallville, Ind.

Koch Butchers' Supply Co.
14th, Gentry & Howell Sts.
North Kansas City, Mo.

Data on Compressors

No. 2881 (Dealer, Wisconsin)—"Please send me specifications data on all small refrigeration compressors. I have been referred to you by W. B. Henderson of the Air Conditioning Manufacturers Association."

Answer: Specifications of commercial refrigeration machines were published in the May 6, 1936, issue of ELECTRIC REFRIGERATION NEWS. Copies of the May 6 issue are available at a cost of 25 cents each.

Units for Household Electric Refrigerators

No. 2882 (Manufacturer, Illinois)—"We are wondering if you are in a position to furnish us with a list of the more important electric refrigeration manufacturers who are building a machine for domestic use.

"While in the past we have not had any equipment suitable for the refrigeration field, we believe it possible that in the near future we may get into this line, and hence would much appreciate the information requested above."

Answer: For the most up-to-date list of active manufacturers of household electric refrigerators take the names of those who listed their specifications in the July 1 issue of ELECTRIC REFRIGERATION NEWS.

A complete list of manufacturers of household electric refrigerators was published on pages 235-248 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Meat Refrigerators

No. 2883 (Distributor, North Carolina)—"I will appreciate it very much if you send me a complete list, the name and address of all manufacturers that make meat counters, market coolers, and refrigerators, or advise me where I may get this information."

Answer: Manufacturers of commercial refrigerators are listed on pages 134 through 184 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Winners of Bermuda Trip Announced by Apollo

NEWARK—Three winners in the "On To Bermuda" contest conducted by Apollo Distributing Co., Crosley distributor here, were recently announced by Sidney S. Muther of that firm.

Winners, all salesmen for Crosley dealers in the Newark territory, are: J. H. Germond, E. A. Kirch Co., Newark; J. McKnight, Roth Seuferling Co., West New York; and J. E. Fitzgerald, of J. E. Fitzgerald, Inc., Union City, N. J. Merchandise prizes were given to hundreds of other retail salesmen, Mr. Muther reports.

Crosley distributors in New Jersey are now participating in the $60,000 Crosley contest that started July 10 and closes Aug. 31.

F-M June Sales Up 207%

INDIANAPOLIS — Shipments of Fairbanks-Morse refrigerators for June, 1936, were 207% greater than for June last year, reports W. Paul Jones, general manager of the home appliance division of Fairbanks, Morse & Co.

The Buyer's Guide

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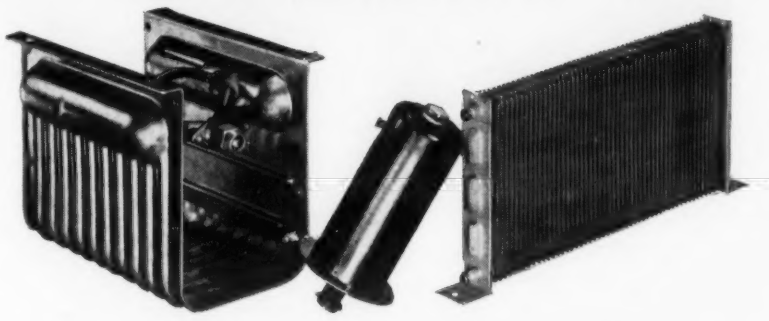

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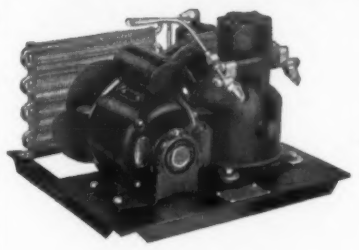

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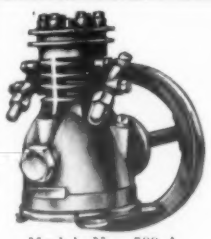

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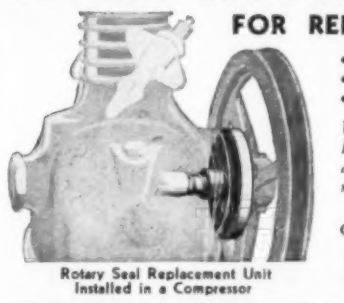

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● Here is a new Leak Detector for F-12* that offers outstanding improvements. Simplified construction, compact, economical and dependable. A positive detector for even the smallest leaks. One filling of Frigidaire special fuel lasts from 45 minutes to an hour. All parts are replaceable. Light and sturdy.

*Also can be used to detect leaks of Methyl Chloride.

This Frigidaire Leak Detector is an indispensable tool for service men. Easy to operate. Complete instructions with every detector. And the price is amazingly low. It will pay you to get full details. See your nearest Frigidaire Distributor or write Frigidaire Corporation, Dept. ERN-82, Dayton, Ohio.

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